

Air Quality Modeling Study to Support Changes to
State Implementation Plan
for
Pleasant Township, Glade Township, City of Warren
Warren County, Pennsylvania

[January 3, 1995]

I. Background

Federal Register, Volume 58, No.243, Tuesday, December 21, 1993, Page 67334, designated the Glade and Pleasant Townships and the City of Warren, PA as non-attainment for sulfur dioxide. Pursuant to section 191(a) of the Clean Air Act, the Commonwealth of Pennsylvania is required to submit an implementation plan for the Warren area to EPA within 18 months of the effective date of redesignation. Therefore, the revision must be submitted to EPA by July 20, 1995. Section 192 of the Clean Air Act indicates the plan must demonstrate attainment of the NAAQS for sulfur dioxide within five (5) years of the redesignation.

The non-attainment area defined by Glade and Pleasant Townships and the City of Warren was based upon modeled exceedances of the short-term sulfur dioxide standards at the United Refining Company facility in Glade Township. This "new" non-attainment area adjoins the Conewango Township non-attainment area which is currently under EPA review for reclassification to attainment. In the 1993 modeling study to support the Conewango Township reclassification action, the concept of modeling domain was developed. Because of periodic interaction between the Warren Generating station and United Refining sources, the modeling domain has been defined to include receptors in Conewango, Pleasant, and Glade Townships and the City of Warren. In the paragraphs which follow, a brief background description is given which summarizes administrative and modeling activities in this modeling domain.

On March 3, 1978, EPA designated Conewango Township in Warren County, PA as non-attainment for sulfur dioxide pursuant to Section L(17) of the Clean Air Act, [42 U.S.C. § 7407] and the Department's recommendation of December 5, 1977. On February 24, 1984 the EPA notified the Commonwealth that the Department must submit a SIP revision for Conewango Township based upon monitored exceedances of the short-term sulfur dioxide standards. On December 5, 1984 the Department and PENELEC entered into a Consent Agreement which required PENELEC to select a dispersion model to be used to set emission limits at the Warren Generating Station in order to bring the Township into compliance. On December 28, 1984 DER submitted this Consent Order to EPA as part of the SIP revision. On May 5, 1985 the EPA published in the Federal Register a proposal to approve the SIP revision. 50 Fed. Reg. 19,548, (1985). No further action on approval of the SIP took place until 1992. In the years between 1985 and 1992 both PENELEC and the United Refining Company undertook separate studies aimed at reducing sulfur dioxide emissions in the area in order to meet the NAAQS.

The passage of the Clean Air Amendments of 1990 extended the deadlines for attaining NAAQS to at least five years after November 15, 1990. [42 U.S.C. § 7514, 7414a.] Subsequently, on June 15, 1992, EPA notified the Commonwealth of Pennsylvania that sanctions could be imposed for failure to submit an approvable SIP for Conewango Township within 18 months.

PENELEC and the Department entered into a Consent Order which stipulated that PENELEC would undertake a model evaluation study comparing the guideline model RTDM to the PENELEC preferred model LAPPS. The results of this evaluation would determine the model that would be used to set emission limits for the Warren Generating station in order to bring the area in compliance with NAAQS for sulfur dioxide. PENELEC submitted a protocol defining their approach to this analysis on September 19, 1992. Based on this Department-approved protocol PENELEC completed one year of data collection including meteorological data from their 150-meter tower

and ambient sulfur dioxide monitoring at seven stations. PENELEC competed the guideline model RTDM against their preferred model LAPPES to determine which model would be used to set final emission limits for the Warren Generating plant. This study was completed and submitted to DER late in the Summer 1994. The model LAPPES easily met the model comparison criteria and qualified to be used to set the emission limits for the Warren Generating plant. Although operating currently at a Consent Order emission limit of 3.0 lbs SO₂/MMBTU, the modeling demonstrated attainment for operation of 2 boilers at a rate of 3.32 lbs SO₂ /MMBTU. With the completion and submission of the emissions limit study, the provisions of the Consent Order between the DER and Pennsylvania Electric Company have been met.

DER is currently beginning its review of a study for repowering certain boilers at the Warren Generating Plant. It is expected that this new project will reduce significantly the total sulfur dioxide emissions from this facility and will assure continued attainment of the NAAQS.

In order to meet the EPA-imposed sanctions limit for the Conewango Township non-attainment area, the Department submitted, on December 9, 1993, the proposed SIP revision package to EPA. This study demonstrated that the Consent Order minimum emission limit of 1 lb SO₂/MMBtu at the Warren Generating plant will ensure attainment of the NAAQS in Conewango Township and in the modeling domain adjacent to the facility. A combination of the guideline models MPTER/RTDM was used in the supporting modeling analysis. This emission limit would have become effective on November 15, 1995 unless a higher limit had been justified through the recently completed modeling evaluation. The completeness acknowledgement for the Conewango Township area from EPA Region III was dated January 6, 1994 and a study review is continuing.

The newly designated non-attainment area, which includes Pleasant and Glade Townships and the City of Warren, PA, was based upon VALLEY modeling performed in the mid-1980's. This first-generation complex terrain "impact" model showed numerous exceedances of the sulfur dioxide short-term standards in the high terrain adjacent to the United Refining Company.

In order to meet anticipated expansion plans United Refining Company erected a 70-meter meteorological tower instrumented to collect data suitable as input to the model RTDM. At the conclusion of one year of data collection, modeling using ISC2/RTDM was accomplished. The Warren Generating Station at the permit allowable emission rate [4.0 lbs SO₂/MMBtu] was modeled in conjunction with the United Refining sources. The "intermediate terrain" modeling results disclosed numerous short-term exceedances of the sulfur dioxide standards. Three specific high-terrain "hotspots" in the immediate vicinity of the United Refining facility were identified with the ISC2/RTDM combination where the Warren Generating station was a significant contributor to the sulfur dioxide exceedances.

The Department granted permission to United Refining to model these "hotspots" with the EPA Guideline model CTSCREEN. Even though the PENELEC facility was modeled at maximum allowable, the use of CTSCREEN in the modeling effort eliminated sulfur dioxide exceedances at all high terrain receptors. This modeling was completed in April 1993, but was not submitted by United Refining as a comment to refute the non-attainment area which is being addressed in this study. The modeling which supports this SIP submittal serves to verify the conclusions reached by the United Refining Company consultant, Sigma Research. [The Sigma Research reports documenting attainment in the current study area are included as Appendix A and Appendix B.]

II. Model Description

The primary model used to study the currently permitted United Refining Company and the PENELEC Warren Generating Station was CTSCREEN [Version 93228]. This model was the only one proposed for use in the modeling protocol submitted to EPA Region III. However, in the 1994 State/Regional Modelers conference the subject of modeling multiple sources with CTSCREEN

) was raised. EPA guidance on the application of CTSCREEN currently restricts model application to those receptors higher than stack height although there is nothing to indicate that the model is not valid down to stack base. There is an area between the height of the shortest and tallest stack in a refinery complex that is complex terrain for some sources and simple terrain for others. In this analysis there were 19 United Refining sources which had to be investigated for this effect.

The 1994 State/Regional Modelers work group explored two options and was expected to recommend that both ISCST2 and CTSCREEN be run separately, with the complete inventory, on a common receptor grid covering the area between the shortest and tallest stacks. In coordination with the EPA Region III Meteorologist, DER followed this general approach.

It should be noted that the meteorological conditions used in the screening mode for CTSCREEN and ISCST2 are not compatible. However, since hourly averages are being produced by both models, it is our opinion that it is not significant. Screening meteorology based upon the stability and wind speeds categories of SCREEN2 taken at 10 degree wind direction increments was prepared as input to the ISCST2 analysis.

Receptors developed for each hill in the CTSCREEN analysis were used as input to the ISCST2 up to the elevation of the tallest stack in the United Refining complex. This range covered receptors at elevations between 1185 feet and 1420 feet MSL.

To add conservatism to the ISCST2 portion of the model runs, DER used the Bowman "intermediate terrain" model known as BEEST-X. The terrain heights varied from 1185 feet [the base of the plant used in CTSCREEN input files and 1420 feet MSL [height of tallest stack in the United Refining refinery complex]. It is noted that ISCST2 [Bowman's BEEST] and BEEST-X were used on the receptors for Hill #1 between the heights discussed above and the "intermediate" model provided slightly more conservative results.

III. MODELING DOMAIN

The modeling domain for this study is identified in Figure 1. Hills Nos. 1 through 3 are the three "hotspot" hills which were identified by the United Refining consultant in their CTSCREEN analysis of the area surrounding the facility. DER regredded these hills so as to confirm the previous modeled results. The receptor locations with heights for Hills #1 through #3 are listed in Tables 1 through 3, respectively.

Hills Nos. 4 and 5 in Figure 1 were added to the original United Refining study even though these hills were eliminated from their study as being "not significant". The receptor locations with elevations for Hills 4 and 5 combined are given in Table 4.

Hills No.6 and 7 in Pleasant Township [Figure 2] west of the United Refining facility were included in the protocol for this study, but were subsequently eliminated ased upon preliminary modeling. There is little chance for significant oncentrations at these locations interactively and previous studies have also demonstrated negliible impact from sources considered individually.

The non-attainment area consists of Pleasant and Glade Townships and the City of Warren. Based upon extensive previous modeling reviewed and performed using MPTER/RTDM, ISC2/RTDM and CTSCREEN during the Conewango Township SIP analysis, the Department believes that all of the areas with maximum groundlevel concentrations which could exceed the short-term standards for sulfur dioxide have been identified.

IV. Receptors

Contours were selected to provide a representative grid for application of both ISCST2 and CTSCREEN. Contours were generated at elevations of 1185, 1240, 1300, 1350 and 1420 feet MSL for ISCST2 with continuation at 50 foot increments to the peak of each hill. All receptor locations are referenced to the United Refining boilerhouse stack location with UTM coordinates of Easterly = 655.660 km and Northerly = 4632.170 km. Receptors were generated using the computer codes associated with CTDMPPLUS/CTSCREEN. A complete listing of receptors for all hills is found in Tables 1 through 4.

III. Emission Sources

The stack parameters and emission rates used in the CTSCREEN modeling for the United Refining and Warren sources are listed in Table 5. The sources listed for the United Refining facility were verified from active permit files for completeness and currency. The emission rates are current permit allowable. The emission rate for the Warren Generating station reflects a value of 3.2 lbs SO₂/MMBtu, a value slightly higher than the current Consent Order rate of 3.0 lbs SO₂/MMBtu.

IV. Monitored Background Sulfur Dioxide

The background values of sulfur dioxide for the annual, 24-hour, and 3-hour averaging times were extracted from the report prepared by Sigma Research for the United Refining Company. DER reviewed the development of these values during previous permitting activity. The consultant followed EPA guideline procedures. [Complete details are given in Appendix A]. A summary of their analysis results follows.

Data from the Warren North and South COPAMS stations were used to exclude the major refinery sources and the Penelec Warren station. A map is included in this report as Figure 3. Since the Sigma Research study has been prepared, Warren North has been deactivated and Warren South is going to be relocated to a point considered more representative of the area. Because of unique river valley orientation in the Warren area, many monitored values could not be used. A summary of the sulfur dioxide background concentrations developed by Sigma Research and used in this study with CTSCREEN modeling results follow:

| Averaging Period | Neutral/Stable [ug/m ³] | Unstable [ug/m ³] |
|------------------|--|-----------------------------------|
| 3-hour | 76 | 56 |
| 24-hour | 79 | 40 |
| Annual | 18 | 18 |

In the DER study for the Conewango Township sulfur dioxide non-attainment area, monitored observations from the Penelec Preston station were used to establish background concentrations. It is our opinion that the Preston values were more representative of background. The Warren North and South COPAMS stations were subject to residual concentrations because of the recirculation effects in the river valley. However, use of the values above adds conservatism to the analysis.

V. Modeling Results

A summary table showing the DER modeling results for the CTSCREEN modeling is given in Table 6 for Hills 1, 2, 3 and 4/5 combined. The maximum hourly

FIGURE 1
HILL LOCATION
UNITED REFINING COMPANY

concentration for each stability class is given along with wind conditions that caused the impact. The conversion factors from CTSCREEN used to estimate 3-hour, 24-hour, and annual concentrations are .7, .15, and .03, respectively. The background values listed in Notes have been added to the values shown. Also included in Table 6 is the distance and orientation of the maximum receptor from the United Refining Company boilerhouse stack. The values in the table reflect the estimates for the United Refining impact alone on Hills 1 & 2. It is physically impossible for the United Refining and Warren station to impact the same receptor simultaneously. The tabular values for Hills 3 & 4/5 include contributions from the PENELEC facility.

The analysis demonstrates quite clearly the impact of the United Refining facility on the high gradient terrain within the river valley. The maximum hourly concentration is found at receptors at 1550 feet MSL and above. Although not shown the ISCST2 modeling performed to assess effects of varying stack heights of the refining complex on the lower terrain immediately adjacent to facility did not disclose concentrations which approach those estimated for the higher terrain receptors. The FCC regenerator in the United Refining complex is the major contributor to the maximum concentration receptor in six out of the eight impacts listed. This source also is the highest emitter of the sources. The two other major contributing sources are the Old Reformer Heater and the Crude (Wheco) Heater which have stack heights equivalent to the FCC regenerator (45.72 meters above grade).

Table 7 summarizes the CTSCREEN results extracted from the United Refining Company studies prepared by Sigma Research. Even though there is a different receptor data base, the maximum concentrations shown validate the conclusion that normal operation of the United Refining Company and the Warren Generating station will not cause violations of the National Ambient Air Quality Standard for sulfur dioxide.

FIGURE 1

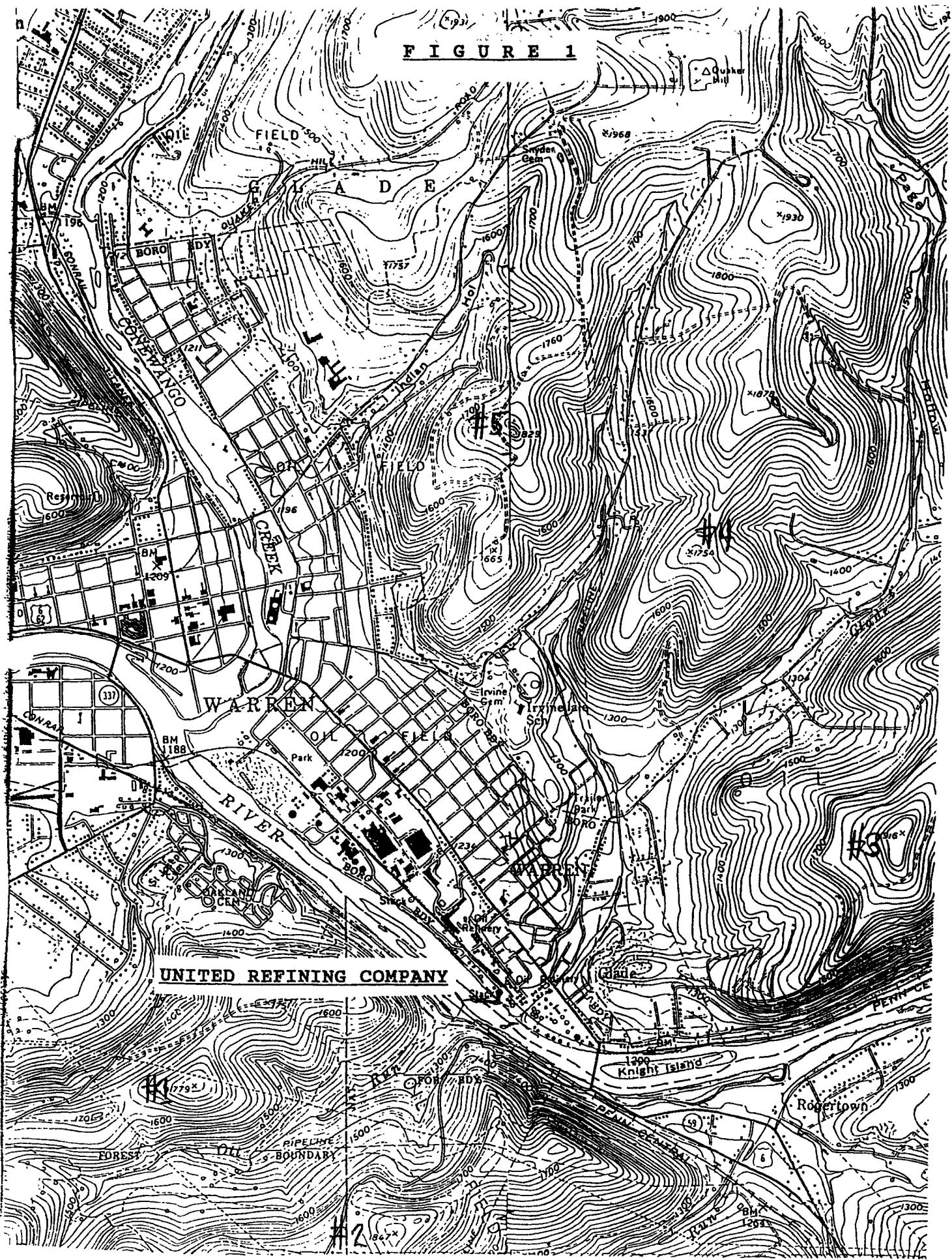


FIGURE 2
HILL LOCATION
PLEASANT TOWNSHIP

FIGURE 2

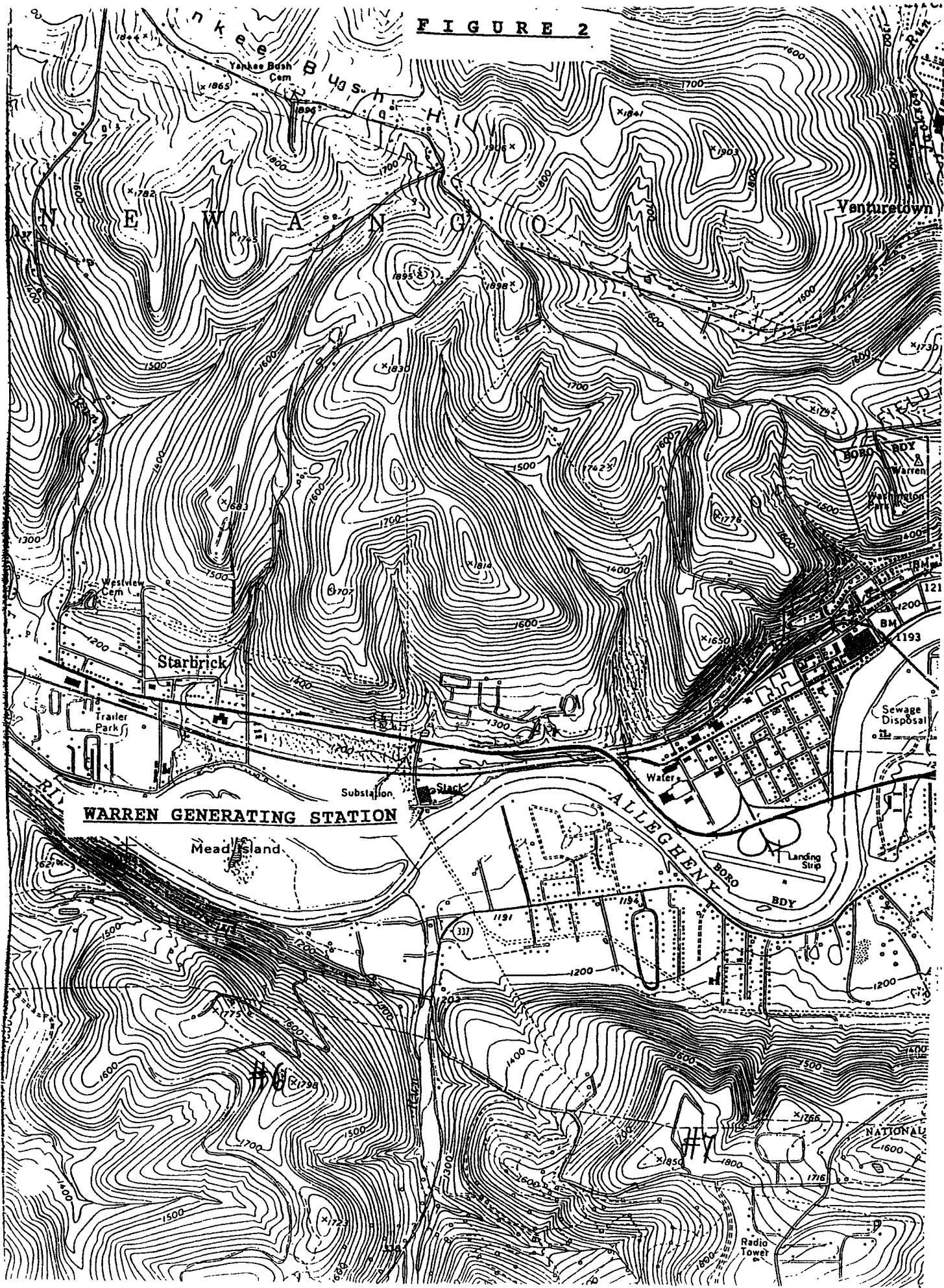


FIGURE 3
MONITOR LOCATION
WARREN NORTH AND WARREN SOUTH



Figure 2-3. Locations of Warren North and South monitors. (1 km = 2.9 cm)

TABLE 1
HILL #1
RECEPTORS

HILL 1

RECEPTOR INFORMATION

| RECEPTOR NUMBER | EAST * COORD [METERS] | NORTH * COORD [METERS] | ELEVATION [FEET] |
|--------------------|-----------------------------|------------------------------|---------------------|
| 1 | -1296.00 | 732.80 | 1185.0 |
| 2 | -1213.19 | 676.74 | 1185.0 |
| 3 | -1130.66 | 620.28 | 1185.0 |
| 4 | -1050.50 | 560.51 | 1185.0 |
| 5 | -971.83 | 498.91 | 1185.0 |
| 6 | -897.76 | 431.73 | 1185.0 |
| 7 | -822.70 | 365.81 | 1185.0 |
| 8 | -739.45 | 310.41 | 1185.0 |
| 9 | -658.88 | 251.74 | 1185.0 |
| 10 | -588.29 | 180.92 | 1185.0 |
| 11 | -512.66 | 116.15 | 1185.0 |
| 12 | -430.03 | 59.82 | 1185.0 |
| 13 | -343.98 | 8.96 | 1185.0 |
| 14 | -1286.00 | 675.20 | 1240.0 |
| 15 | -1202.55 | 620.11 | 1240.0 |
| 16 | -1120.19 | 563.41 | 1240.0 |
| 17 | -1038.74 | 505.39 | 1240.0 |
| 18 | -957.43 | 447.18 | 1240.0 |
| 19 | -879.96 | 384.30 | 1240.0 |
| 20 | -802.42 | 321.72 | 1240.0 |
| 21 | -723.74 | 260.48 | 1240.0 |
| 22 | -650.63 | 192.27 | 1240.0 |
| 23 | -576.73 | 125.04 | 1240.0 |
| 24 | -495.38 | 67.28 | 1240.0 |
| 25 | -414.16 | 9.44 | 1240.0 |
| 26 | -1449.00 | 759.70 | 1260.0 |
| 27 | -1372.14 | 695.73 | 1260.0 |
| 28 | -1291.31 | 637.40 | 1260.0 |
| 29 | -1209.97 | 580.08 | 1260.0 |
| 30 | -1135.75 | 513.06 | 1260.0 |
| 31 | -1070.53 | 437.78 | 1260.0 |
| 32 | -993.22 | 378.96 | 1260.0 |
| 33 | -903.65 | 334.77 | 1260.0 |
| 34 | -820.55 | 279.15 | 1260.0 |
| 35 | -740.56 | 219.21 | 1260.0 |
| 36 | -665.52 | 153.33 | 1260.0 |
| 37 | -593.21 | 84.26 | 1260.0 |
| 38 | -518.26 | 18.06 | 1260.0 |
| 39 | -455.57 | -59.61 | 1260.0 |
| 40 | -407.55 | -146.85 | 1260.0 |
| 41 | -2043.00 | -115.50 | 1300.0 |
| 42 | -1988.74 | -31.50 | 1300.0 |
| 43 | -1943.62 | 56.87 | 1300.0 |
| 44 | -1912.42 | 151.87 | 1300.0 |
| 45 | -1890.09 | 247.10 | 1300.0 |

| | | | |
|-----|----------|---------|--------|
| 46 | -1923.33 | 341.41 | 1300.0 |
| 47 | -1843.04 | 398.52 | 1300.0 |
| 48 | -1839.43 | 476.82 | 1300.0 |
| 49 | -1933.91 | 509.60 | 1300.0 |
| 50 | -1910.46 | 593.43 | 1300.0 |
| 51 | -1840.44 | 660.79 | 1300.0 |
| 52 | -1751.51 | 704.37 | 1300.0 |
| 53 | -1662.15 | 718.11 | 1300.0 |
| 54 | -1595.88 | 643.22 | 1300.0 |
| 55 | -1521.66 | 703.61 | 1300.0 |
| 56 | -1425.00 | 677.97 | 1300.0 |
| 57 | -1362.92 | 616.39 | 1300.0 |
| 58 | -1344.23 | 518.46 | 1300.0 |
| 59 | -1275.19 | 507.59 | 1300.0 |
| 60 | -1177.69 | 496.85 | 1300.0 |
| 61 | -1124.22 | 413.73 | 1300.0 |
| 62 | -1049.40 | 359.14 | 1300.0 |
| 63 | -956.30 | 325.29 | 1300.0 |
| 64 | -870.87 | 273.32 | 1300.0 |
| 65 | -790.06 | 214.81 | 1300.0 |
| 66 | -712.69 | 151.46 | 1300.0 |
| 67 | -638.87 | 84.00 | 1300.0 |
| 68 | -569.88 | 11.74 | 1300.0 |
| 69 | -514.53 | -70.44 | 1300.0 |
| 70 | -480.87 | -161.12 | 1300.0 |
| 71 | -500.63 | -259.15 | 1300.0 |
| 72 | -553.05 | -343.14 | 1300.0 |
| 73 | -615.84 | -420.81 | 1300.0 |
| 74 | -687.36 | -489.83 | 1300.0 |
| 75 | -776.83 | -530.55 | 1300.0 |
| 76 | -854.41 | -587.77 | 1300.0 |
| 77 | -1948.00 | -109.40 | 1340.0 |
| 78 | -1895.01 | -24.59 | 1340.0 |
| 79 | -1858.90 | 67.37 | 1340.0 |
| 80 | -1832.41 | 163.79 | 1340.0 |
| 81 | -1825.01 | 263.23 | 1340.0 |
| 82 | -1777.00 | 339.04 | 1340.0 |
| 83 | -1710.95 | 412.53 | 1340.0 |
| 84 | -1642.23 | 474.21 | 1340.0 |
| 85 | -1542.23 | 474.65 | 1340.0 |
| 86 | -1445.66 | 450.28 | 1340.0 |
| 87 | -1349.51 | 422.79 | 1340.0 |
| 88 | -1251.83 | 401.37 | 1340.0 |
| 89 | -1163.65 | 358.72 | 1340.0 |
| 90 | -1070.83 | 327.48 | 1340.0 |
| 91 | -972.58 | 308.87 | 1340.0 |
| 92 | -890.19 | 252.32 | 1340.0 |
| 93 | -804.72 | 200.60 | 1340.0 |
| 94 | -722.88 | 143.47 | 1340.0 |
| 95 | -649.86 | 75.81 | 1340.0 |
| 96 | -582.15 | 2.23 | 1340.0 |
| 97 | -526.72 | -79.30 | 1340.0 |
| 98 | -519.15 | -176.71 | 1340.0 |
| 99 | -541.71 | -272.55 | 1340.0 |
| 100 | -600.79 | -352.02 | 1340.0 |

| | | | |
|-----|----------|---------|--------|
| 101 | -678.58 | -414.47 | 1340.0 |
| 102 | -765.98 | -460.39 | 1340.0 |
| 103 | -836.70 | -520.35 | 1340.0 |
| 104 | -914.87 | -582.53 | 1340.0 |
| 105 | -1839.00 | -76.76 | 1380.0 |
| 106 | -1800.86 | 14.08 | 1380.0 |
| 107 | -1807.98 | 113.82 | 1380.0 |
| 108 | -1785.87 | 210.60 | 1380.0 |
| 109 | -1735.25 | 282.82 | 1380.0 |
| 110 | -1638.47 | 308.01 | 1380.0 |
| 111 | -1539.40 | 320.81 | 1380.0 |
| 112 | -1440.40 | 317.35 | 1380.0 |
| 113 | -1341.72 | 301.13 | 1380.0 |
| 114 | -1243.88 | 280.53 | 1380.0 |
| 115 | -1145.07 | 266.85 | 1380.0 |
| 116 | -1045.34 | 259.48 | 1380.0 |
| 117 | -946.89 | 241.98 | 1380.0 |
| 118 | -850.96 | 214.26 | 1380.0 |
| 119 | -768.19 | 159.79 | 1380.0 |
| 120 | -695.78 | 90.91 | 1380.0 |
| 121 | -629.62 | 15.94 | 1380.0 |
| 122 | -576.65 | -67.03 | 1380.0 |
| 123 | -541.11 | -160.50 | 1380.0 |
| 124 | -574.84 | -250.14 | 1380.0 |
| 125 | -642.89 | -323.01 | 1380.0 |
| 126 | -729.49 | -372.20 | 1380.0 |
| 127 | -817.31 | -419.81 | 1380.0 |
| 128 | -891.53 | -486.74 | 1380.0 |
| 129 | -964.19 | -554.49 | 1380.0 |
| 130 | -1051.34 | -603.38 | 1380.0 |
| 131 | -1825.00 | 141.60 | 1420.0 |
| 132 | -1757.68 | -67.66 | 1420.0 |
| 133 | -1760.68 | 30.68 | 1420.0 |
| 134 | -1770.32 | 130.21 | 1420.0 |
| 135 | -1730.39 | 216.52 | 1420.0 |
| 136 | -1643.94 | 238.64 | 1420.0 |
| 137 | -1544.12 | 234.74 | 1420.0 |
| 138 | -1444.44 | 242.80 | 1420.0 |
| 139 | -1345.55 | 233.10 | 1420.0 |
| 140 | -1246.54 | 219.43 | 1420.0 |
| 141 | -1146.88 | 213.76 | 1420.0 |
| 142 | -1046.97 | 213.33 | 1420.0 |
| 143 | -947.60 | 202.17 | 1420.0 |
| 144 | -852.16 | 173.10 | 1420.0 |
| 145 | -777.63 | 110.83 | 1420.0 |
| 146 | -705.83 | 41.42 | 1420.0 |
| 147 | -635.99 | -29.95 | 1420.0 |
| 148 | -585.99 | -115.62 | 1420.0 |
| 149 | -602.62 | -210.62 | 1420.0 |
| 150 | -667.66 | -285.12 | 1420.0 |
| 151 | -750.65 | -337.48 | 1420.0 |
| 152 | -846.76 | -363.60 | 1420.0 |
| 153 | -909.67 | -432.95 | 1420.0 |
| 154 | -980.90 | -499.01 | 1420.0 |

| | | | |
|-----|----------|---------|--------|
| 155 | -1075.78 | -514.08 | 1420.0 |
| 156 | -1130.07 | -508.56 | 1420.0 |
| 157 | -1127.17 | -602.42 | 1420.0 |
| 158 | -1182.22 | -684.69 | 1420.0 |
| 159 | -1254.92 | -752.92 | 1420.0 |
| 160 | -1922.00 | -277.60 | 1460.0 |
| 161 | -1851.15 | -207.02 | 1460.0 |
| 162 | -1778.79 | -138.23 | 1460.0 |
| 163 | -1705.71 | -75.87 | 1460.0 |
| 164 | -1713.80 | 23.80 | 1460.0 |
| 165 | -1719.15 | 123.35 | 1460.0 |
| 166 | -1679.22 | 196.00 | 1460.0 |
| 167 | -1579.36 | 201.39 | 1460.0 |
| 168 | -1479.46 | 202.32 | 1460.0 |
| 169 | -1379.65 | 197.31 | 1460.0 |
| 170 | -1280.40 | 185.89 | 1460.0 |
| 171 | -1180.97 | 196.55 | 1460.0 |
| 172 | -1081.74 | 197.82 | 1460.0 |
| 173 | -982.86 | 182.86 | 1460.0 |
| 174 | -883.67 | 181.23 | 1460.0 |
| 175 | -799.92 | 126.60 | 1460.0 |
| 176 | -731.92 | 53.96 | 1460.0 |
| 177 | -654.64 | -8.71 | 1460.0 |
| 178 | -613.19 | -98.97 | 1460.0 |
| 179 | -627.92 | -190.98 | 1460.0 |
| 180 | -695.30 | -262.50 | 1460.0 |
| 181 | -782.81 | -307.92 | 1460.0 |
| 182 | -878.05 | -329.88 | 1460.0 |
| 183 | -935.66 | -410.57 | 1460.0 |
| 184 | -1006.06 | -472.27 | 1460.0 |
| 185 | -1097.83 | -460.62 | 1460.0 |
| 186 | -1192.08 | -428.15 | 1460.0 |
| 187 | -1187.11 | -487.65 | 1460.0 |
| 188 | -1166.35 | -582.48 | 1460.0 |
| 189 | -1195.65 | -674.49 | 1460.0 |
| 190 | -1264.71 | -744.13 | 1460.0 |
| 191 | -1938.00 | -313.90 | 1500.0 |
| 192 | -1861.31 | -249.72 | 1500.0 |
| 193 | -1784.62 | -185.54 | 1500.0 |
| 194 | -1704.88 | -125.37 | 1500.0 |
| 195 | -1668.06 | -48.86 | 1500.0 |
| 196 | -1683.20 | 49.99 | 1500.0 |
| 197 | -1690.98 | 149.67 | 1500.0 |
| 198 | -1608.61 | 185.38 | 1500.0 |
| 199 | -1512.07 | 165.98 | 1500.0 |
| 200 | -1416.43 | 136.88 | 1500.0 |
| 201 | -1321.14 | 139.45 | 1500.0 |
| 202 | -1224.56 | 162.66 | 1500.0 |
| 203 | -1124.61 | 165.79 | 1500.0 |
| 204 | -1025.01 | 157.14 | 1500.0 |
| 205 | -925.34 | 161.73 | 1500.0 |
| 206 | -840.40 | 120.92 | 1500.0 |
| 207 | -763.07 | 57.59 | 1500.0 |
| 208 | -688.29 | -8.82 | 1500.0 |
| 209 | -639.23 | -94.93 | 1500.0 |

| | | | |
|-----|----------|---------|--------|
| 210 | -659.87 | -181.11 | 1500.0 |
| 211 | -728.01 | -252.14 | 1500.0 |
| 212 | -818.11 | -274.76 | 1500.0 |
| 213 | -917.84 | -269.68 | 1500.0 |
| 214 | -964.04 | -346.13 | 1500.0 |
| 215 | -1013.57 | -432.53 | 1500.0 |
| 216 | -1109.67 | -425.67 | 1500.0 |
| 217 | -1204.68 | -394.66 | 1500.0 |
| 218 | -1281.95 | -419.62 | 1500.0 |
| 219 | -1232.15 | -502.32 | 1500.0 |
| 220 | -1187.11 | -586.01 | 1500.0 |
| 221 | -1239.04 | -669.55 | 1500.0 |
| 222 | -1317.65 | -729.80 | 1500.0 |
| 223 | -1407.57 | -764.78 | 1500.0 |
| 224 | -1507.27 | -771.97 | 1500.0 |
| 225 | -1957.00 | -368.30 | 1540.0 |
| 226 | -1876.13 | -309.48 | 1540.0 |
| 227 | -1795.57 | -250.25 | 1540.0 |
| 228 | -1717.17 | -188.21 | 1540.0 |
| 229 | -1646.45 | -117.82 | 1540.0 |
| 230 | -1624.82 | -25.76 | 1540.0 |
| 231 | -1633.32 | 73.36 | 1540.0 |
| 232 | -1585.77 | 140.57 | 1540.0 |
| 233 | -1489.14 | 138.15 | 1540.0 |
| 234 | -1394.81 | 106.93 | 1540.0 |
| 235 | -1305.10 | 118.57 | 1540.0 |
| 236 | -1209.59 | 138.36 | 1540.0 |
| 237 | -1109.66 | 137.47 | 1540.0 |
| 238 | -1009.80 | 132.59 | 1540.0 |
| 239 | -909.97 | 128.21 | 1540.0 |
| 240 | -823.47 | 84.34 | 1540.0 |
| 241 | -749.36 | 17.64 | 1540.0 |
| 242 | -674.91 | -48.92 | 1540.0 |
| 243 | -662.82 | -136.75 | 1540.0 |
| 244 | -736.53 | -199.94 | 1540.0 |
| 245 | -830.55 | -231.72 | 1540.0 |
| 246 | -929.75 | -221.22 | 1540.0 |
| 247 | -987.48 | -269.46 | 1540.0 |
| 248 | -1029.59 | -359.43 | 1540.0 |
| 249 | -1110.47 | -384.13 | 1540.0 |
| 250 | -1208.04 | -363.39 | 1540.0 |
| 251 | -1307.29 | -362.84 | 1540.0 |
| 252 | -1340.39 | -420.77 | 1540.0 |
| 253 | -1279.77 | -500.29 | 1540.0 |
| 254 | -1256.80 | -590.74 | 1540.0 |
| 255 | -1292.00 | -673.46 | 1540.0 |
| 256 | -1380.64 | -716.98 | 1540.0 |
| 257 | -1478.47 | -737.54 | 1540.0 |
| 258 | -1577.56 | -750.96 | 1540.0 |
| 259 | -1677.26 | -758.43 | 1540.0 |
| 260 | -1977.00 | -462.40 | 1580.0 |
| 261 | -1902.01 | -396.25 | 1580.0 |
| 262 | -1827.01 | -330.10 | 1580.0 |
| 263 | -1753.17 | -262.67 | 1580.0 |

| | | | |
|-----|----------|---------|--------|
| 264 | -1679.54 | -195.00 | 1580.0 |
| 265 | -1605.92 | -127.33 | 1580.0 |
| 266 | -1568.01 | -42.37 | 1580.0 |
| 267 | -1560.61 | 57.35 | 1580.0 |
| 268 | -1518.22 | 118.84 | 1580.0 |
| 269 | -1425.14 | 92.52 | 1580.0 |
| 270 | -1337.16 | 50.81 | 1580.0 |
| 271 | -1238.50 | 67.08 | 1580.0 |
| 272 | -1139.83 | 83.35 | 1580.0 |
| 273 | -1040.94 | 93.51 | 1580.0 |
| 274 | -943.01 | 103.54 | 1580.0 |
| 275 | -848.75 | 87.65 | 1580.0 |
| 276 | -770.58 | 27.18 | 1580.0 |
| 277 | -702.83 | -46.37 | 1580.0 |
| 278 | -705.00 | -129.48 | 1580.0 |
| 279 | -794.83 | -162.68 | 1580.0 |
| 280 | -894.82 | -161.25 | 1580.0 |
| 281 | -994.12 | -171.68 | 1580.0 |
| 282 | -1040.43 | -260.22 | 1580.0 |
| 283 | -1092.82 | -330.51 | 1580.0 |
| 284 | -1192.29 | -320.27 | 1580.0 |
| 285 | -1292.01 | -312.70 | 1580.0 |
| 286 | -1381.75 | -351.19 | 1580.0 |
| 287 | -1381.68 | -434.39 | 1580.0 |
| 288 | -1335.71 | -522.86 | 1580.0 |
| 289 | -1320.35 | -613.53 | 1580.0 |
| 290 | -1375.21 | -691.73 | 1580.0 |
| 291 | -1468.38 | -720.61 | 1580.0 |
| 292 | -1568.17 | -724.76 | 1580.0 |
| 293 | -1925.00 | -487.00 | 1620.0 |
| 294 | -1841.28 | -432.32 | 1620.0 |
| 295 | -1776.77 | -358.29 | 1620.0 |
| 296 | -1721.55 | -274.92 | 1620.0 |
| 297 | -1666.32 | -191.55 | 1620.0 |
| 298 | -1611.10 | -108.18 | 1620.0 |
| 299 | -1555.88 | -24.81 | 1620.0 |
| 300 | -1498.74 | 57.19 | 1620.0 |
| 301 | -1408.16 | 43.20 | 1620.0 |
| 302 | -1309.71 | 26.65 | 1620.0 |
| 303 | -1215.78 | 57.54 | 1620.0 |
| 304 | -1119.35 | 57.45 | 1620.0 |
| 305 | -1020.22 | 48.08 | 1620.0 |
| 306 | -920.31 | 50.64 | 1620.0 |
| 307 | .17 | 23.29 | 1620.0 |
| 308 | -764.35 | -54.17 | 1620.0 |
| 309 | -803.01 | -109.04 | 1620.0 |
| 310 | -902.67 | -104.90 | 1620.0 |
| 311 | -1001.98 | -116.62 | 1620.0 |
| 312 | -1077.65 | -169.67 | 1620.0 |
| 313 | -1110.96 | -261.71 | 1620.0 |
| 314 | -1203.11 | -267.17 | 1620.0 |
| 315 | 1302.97 | -264.29 | 1620.0 |
| 316 | -1396.33 | -291.67 | 1620.0 |
| 317 | -1461.06 | -360.62 | 1620.0 |
| 318 | -1428.32 | -447.94 | 1620.0 |

| | | | |
|-----|----------|---------|--------|
| 319 | -1380.32 | -535.65 | 1620.0 |
| 320 | -1376.53 | -633.14 | 1620.0 |
| 321 | -1460.80 | -679.77 | 1620.0 |
| 322 | -1559.81 | -692.38 | 1620.0 |
| 323 | -1659.77 | -694.80 | 1620.0 |
| 324 | -1759.75 | -696.03 | 1620.0 |
| 325 | -1947.00 | -629.20 | 1660.0 |
| 326 | -1961.88 | -530.31 | 1660.0 |
| 327 | -1883.30 | -469.15 | 1660.0 |
| 328 | -1803.60 | -408.76 | 1660.0 |
| 329 | -1722.50 | -350.25 | 1660.0 |
| 330 | -1667.74 | -267.60 | 1660.0 |
| 331 | -1616.46 | -181.75 | 1660.0 |
| 332 | -1565.19 | -95.89 | 1660.0 |
| 333 | -1513.92 | -10.03 | 1660.0 |
| 334 | -1471.19 | 55.35 | 1660.0 |
| 335 | -1375.58 | 28.19 | 1660.0 |
| 336 | -1285.00 | 27.12 | 1660.0 |
| 337 | -1190.55 | 56.55 | 1660.0 |
| 338 | -1090.55 | 56.53 | 1660.0 |
| 339 | -990.58 | 54.31 | 1660.0 |
| 340 | -892.81 | 40.14 | 1660.0 |
| 341 | -805.37 | -2.14 | 1660.0 |
| 342 | -762.82 | -84.98 | 1660.0 |
| 343 | -849.07 | -111.86 | 1660.0 |
| 344 | -949.07 | -111.04 | 1660.0 |
| 345 | -1045.12 | -138.08 | 1660.0 |
| 346 | -1090.27 | -219.59 | 1660.0 |
| 347 | -1169.77 | -255.89 | 1660.0 |
| 348 | -1269.29 | -265.45 | 1660.0 |
| 349 | -1367.66 | -276.84 | 1660.0 |
| 350 | -1448.40 | -335.83 | 1660.0 |
| 351 | -1455.43 | -418.52 | 1660.0 |
| 352 | -1406.51 | -505.05 | 1660.0 |
| 353 | -1389.00 | -597.78 | 1660.0 |
| 354 | -1440.80 | -668.93 | 1660.0 |
| 355 | -1535.55 | -691.73 | 1660.0 |
| 356 | -1635.52 | -694.24 | 1660.0 |
| 357 | -1817.00 | -572.20 | 1700.0 |
| 358 | -1767.25 | -485.45 | 1700.0 |
| 359 | -1695.49 | -416.82 | 1700.0 |
| 360 | -1619.96 | -351.28 | 1700.0 |
| 361 | -1560.08 | -274.34 | 1700.0 |
| 362 | -1512.74 | -186.55 | 1700.0 |
| 363 | -1462.63 | -100.03 | 1700.0 |
| 364 | -1401.45 | -28.57 | 1700.0 |
| 365 | -1301.98 | -20.40 | 1700.0 |
| 366 | -1204.34 | -6.33 | 1700.0 |
| 367 | -1107.11 | -29.69 | 1700.0 |
| 368 | -1160.75 | -112.28 | 1700.0 |
| 369 | -1236.90 | -171.77 | 1700.0 |
| 370 | -1334.60 | -177.95 | 1700.0 |
| 371 | -1426.11 | -218.19 | 1700.0 |
| 372 | -1505.80 | -272.25 | 1700.0 |

| | | | |
|-----|----------|---------|--------|
| 373 | -1521.77 | -369.40 | 1700.0 |
| 374 | -1504.33 | -467.54 | 1700.0 |
| 375 | -1490.87 | -564.31 | 1700.0 |
| 376 | -1555.97 | -618.96 | 1700.0 |
| 377 | -1654.25 | -627.17 | 1700.0 |
| 378 | -1733.00 | -561.50 | 1740.0 |
| 379 | -1673.98 | -483.30 | 1740.0 |
| 380 | -1581.81 | -466.59 | 1740.0 |
| 381 | -1539.02 | -545.95 | 1740.0 |

* Note: Coordinates referenced to boilerhouse stack at
United Refining Company

Easterly = 655.660 km
Northerly = 4632.170 km

TABLE 2
HILL #2
RECEPTORS

HILL 2

| RECEPTOR NUMBER | EAST * COORD [METERS] | NORTH * COORD [METERS] | ELEVATION ABOVE MSL [FEET] |
|--------------------|-----------------------------|------------------------------|----------------------------------|
| 1 | -337.20 | 14.84 | 1185.0 |
| 2 | -265.86 | -55.24 | 1185.0 |
| 3 | -187.72 | -116.99 | 1185.0 |
| 4 | -104.86 | -172.98 | 1185.0 |
| 5 | -15.96 | -218.74 | 1185.0 |
| 6 | 72.96 | -264.49 | 1185.0 |
| 7 | 159.83 | -314.03 | 1185.0 |
| 8 | 247.60 | -361.87 | 1185.0 |
| 9 | 337.26 | -406.15 | 1185.0 |
| 10 | 429.06 | -445.65 | 1185.0 |
| 11 | 521.86 | -482.89 | 1185.0 |
| 12 | 620.76 | -494.96 | 1185.0 |
| 13 | 720.33 | -504.23 | 1185.0 |
| 14 | -456.70 | 13.07 | 1240.0 |
| 15 | -399.29 | -68.81 | 1240.0 |
| 16 | -325.33 | -130.91 | 1240.0 |
| 17 | -235.28 | -174.36 | 1240.0 |
| 18 | -146.10 | -219.58 | 1240.0 |
| 19 | -55.01 | -260.84 | 1240.0 |
| 20 | 34.98 | -304.44 | 1240.0 |
| 21 | 120.41 | -355.90 | 1240.0 |
| 22 | 203.35 | -411.66 | 1240.0 |
| 23 | 292.61 | -456.74 | 1240.0 |
| 24 | 385.07 | -494.36 | 1240.0 |
| 25 | 480.26 | -524.85 | 1240.0 |
| 26 | -910.90 | -704.80 | 1300.0 |
| 27 | -827.70 | -649.32 | 1300.0 |
| 28 | -740.65 | -601.31 | 1300.0 |
| 29 | -647.21 | -565.70 | 1300.0 |
| 30 | -549.83 | -543.09 | 1300.0 |
| 31 | -465.48 | -541.72 | 1300.0 |
| 32 | -419.25 | -453.05 | 1300.0 |
| 33 | -355.09 | -376.86 | 1300.0 |
| 34 | -286.32 | -304.54 | 1300.0 |
| 35 | -204.80 | -249.92 | 1300.0 |
| 36 | -118.81 | -291.42 | 1300.0 |
| 37 | -40.86 | -350.97 | 1300.0 |
| 38 | 54.99 | -379.46 | 1300.0 |
| 39 | 145.12 | -420.74 | 1300.0 |
| 40 | 230.22 | -473.27 | 1300.0 |
| 41 | 315.31 | -525.80 | 1300.0 |
| 42 | 403.56 | -572.39 | 1300.0 |
| 43 | 494.68 | -613.57 | 1300.0 |
| 44 | 585.60 | -655.21 | 1300.0 |
| 45 | 676.46 | -696.98 | 1300.0 |
| 46 | 769.46 | -733.71 | 1300.0 |
| 47 | 855.99 | -783.05 | 1300.0 |
| 48 | 938.51 | -839.40 | 1300.0 |
| 49 | 1011.20 | -904.32 | 1300.0 |

| | | | |
|-----|---------|----------|--------|
| 50 | 1023.80 | -1003.52 | 1300.0 |
| 51 | 973.58 | -1086.67 | 1300.0 |
| 52 | 911.54 | -1164.67 | 1300.0 |
| 53 | 831.92 | -1225.17 | 1300.0 |
| 54 | 740.61 | -1265.51 | 1300.0 |
| 55 | 643.54 | -1288.25 | 1300.0 |
| 56 | -884.20 | -718.90 | 1350.0 |
| 57 | -798.61 | -667.18 | 1350.0 |
| 58 | -710.03 | -622.87 | 1350.0 |
| 59 | -612.56 | -600.52 | 1350.0 |
| 60 | -520.47 | -612.21 | 1350.0 |
| 61 | -456.67 | -607.19 | 1350.0 |
| 62 | -426.83 | -512.11 | 1350.0 |
| 63 | -362.53 | -435.52 | 1350.0 |
| 64 | -293.66 | -363.48 | 1350.0 |
| 65 | -210.14 | -315.05 | 1350.0 |
| 66 | -118.38 | -336.22 | 1350.0 |
| 67 | -29.64 | -380.93 | 1350.0 |
| 68 | 65.44 | -411.91 | 1350.0 |
| 69 | 147.81 | -468.45 | 1350.0 |
| 70 | 231.81 | -522.70 | 1350.0 |
| 71 | 323.39 | -562.48 | 1350.0 |
| 72 | 415.85 | -600.59 | 1350.0 |
| 73 | 503.58 | -648.49 | 1350.0 |
| 74 | 592.19 | -694.78 | 1350.0 |
| 75 | 681.44 | -739.88 | 1350.0 |
| 76 | 769.49 | -787.27 | 1350.0 |
| 77 | 855.88 | -837.63 | 1350.0 |
| 78 | 930.72 | -902.92 | 1350.0 |
| 79 | 957.05 | -988.79 | 1350.0 |
| 80 | 927.00 | -1079.55 | 1350.0 |
| 81 | 856.01 | -1149.99 | 1350.0 |
| 82 | 767.94 | -1197.34 | 1350.0 |
| 83 | 678.20 | -1241.35 | 1350.0 |
| 84 | 584.87 | -1277.24 | 1350.0 |
| 85 | 497.32 | -1325.47 | 1350.0 |
| 86 | 417.52 | -1385.60 | 1350.0 |
| 87 | -725.20 | -690.00 | 1420.0 |
| 88 | -626.59 | -673.40 | 1420.0 |
| 89 | -529.76 | -685.89 | 1420.0 |
| 90 | -440.60 | -700.66 | 1420.0 |
| 91 | -403.72 | -607.71 | 1420.0 |
| 92 | -362.45 | -517.24 | 1420.0 |
| 93 | -300.42 | -440.08 | 1420.0 |
| 94 | -211.25 | -395.66 | 1420.0 |
| 95 | -116.07 | -397.06 | 1420.0 |
| 96 | -20.18 | -425.28 | 1420.0 |
| 97 | 70.34 | -466.04 | 1420.0 |
| 98 | 148.81 | -527.32 | 1420.0 |
| 99 | 231.47 | -576.00 | 1420.0 |
| 100 | 327.23 | -603.67 | 1420.0 |
| 101 | 419.36 | -642.57 | 1420.0 |
| 102 | 507.96 | -688.93 | 1420.0 |
| 103 | 597.15 | -734.13 | 1420.0 |

| | | | |
|-----|----------|----------|--------|
| 104 | 684.43 | -782.33 | 1420.0 |
| 105 | 765.32 | -841.12 | 1420.0 |
| 106 | 850.07 | -894.20 | 1420.0 |
| 107 | 911.83 | -970.96 | 1420.0 |
| 108 | 863.58 | -1047.16 | 1420.0 |
| 109 | 790.98 | -1115.68 | 1420.0 |
| 110 | 709.43 | -1171.89 | 1420.0 |
| 111 | 616.27 | -1204.51 | 1420.0 |
| 112 | 518.68 | -1224.18 | 1420.0 |
| 113 | -1028.00 | -978.20 | 1500.0 |
| 114 | -951.16 | -914.20 | 1500.0 |
| 115 | -873.11 | -851.77 | 1500.0 |
| 116 | -791.84 | -793.50 | 1500.0 |
| 117 | -709.10 | -737.46 | 1500.0 |
| 118 | -621.74 | -693.05 | 1500.0 |
| 119 | -545.18 | -737.04 | 1500.0 |
| 120 | -483.08 | -811.63 | 1500.0 |
| 121 | -409.27 | -808.37 | 1500.0 |
| 122 | -356.48 | -723.55 | 1500.0 |
| 123 | -277.40 | -662.85 | 1500.0 |
| 124 | -260.61 | -564.27 | 1500.0 |
| 125 | -234.29 | -467.90 | 1500.0 |
| 126 | -161.65 | -406.51 | 1500.0 |
| 127 | -69.35 | -445.00 | 1500.0 |
| 128 | 17.93 | -493.47 | 1500.0 |
| 129 | 98.27 | -552.03 | 1500.0 |
| 130 | 181.46 | -602.95 | 1500.0 |
| 131 | 275.18 | -637.57 | 1500.0 |
| 132 | 365.99 | -679.04 | 1500.0 |
| 133 | 452.49 | -729.22 | 1500.0 |
| 134 | 539.09 | -779.22 | 1500.0 |
| 135 | 626.70 | -827.35 | 1500.0 |
| 136 | 716.33 | -871.70 | 1500.0 |
| 137 | 781.97 | -945.04 | 1500.0 |
| 138 | 755.73 | -1015.64 | 1500.0 |
| 139 | 678.53 | -1078.23 | 1500.0 |
| 140 | 582.81 | -1107.19 | 1500.0 |
| 141 | 484.00 | -1103.10 | 1500.0 |
| 142 | 399.43 | -1152.22 | 1500.0 |
| 143 | 315.56 | 1206.67 | 1500.0 |
| 144 | 226.55 | -1242.50 | 1500.0 |
| 145 | 126.66 | -1237.64 | 1500.0 |
| 146 | 30.95 | -1263.91 | 1500.0 |
| 147 | -20.50 | -1339.60 | 1500.0 |
| 148 | -72.04 | -1423.51 | 1500.0 |
| 149 | -131.96 | -1503.33 | 1500.0 |
| 150 | -83.23 | -1577.95 | 1500.0 |
| 151 | -1010.00 | -1083.00 | 1550.0 |
| 152 | -937.95 | -1013.65 | 1550.0 |
| 153 | -865.43 | -944.85 | 1550.0 |
| 154 | -786.71 | -883.18 | 1550.0 |
| 155 | -704.25 | -826.84 | 1550.0 |
| 156 | -618.74 | -792.91 | 1550.0 |
| 157 | -533.32 | -844.03 | 1550.0 |
| 158 | -450.29 | -889.44 | 1550.0 |

| | | | |
|-----|---------|----------|--------|
| 159 | -350.35 | -886.04 | 1550.0 |
| 160 | -292.24 | -805.21 | 1550.0 |
| 161 | -248.32 | -716.62 | 1550.0 |
| 162 | -217.48 | -621.50 | 1550.0 |
| 163 | -185.94 | -526.60 | 1550.0 |
| 164 | -116.67 | -470.38 | 1550.0 |
| 165 | -32.09 | -501.77 | 1550.0 |
| 166 | 44.38 | -565.80 | 1550.0 |
| 167 | 112.34 | -638.83 | 1550.0 |
| 168 | 205.65 | -664.93 | 1550.0 |
| 169 | 304.72 | -669.07 | 1550.0 |
| 170 | 393.89 | -714.33 | 1550.0 |
| 171 | 480.54 | -764.01 | 1550.0 |
| 172 | 565.15 | -817.31 | 1550.0 |
| 173 | 650.92 | -868.73 | 1550.0 |
| 174 | 721.50 | -936.50 | 1550.0 |
| 175 | 689.00 | -996.89 | 1550.0 |
| 176 | 595.57 | -1028.12 | 1550.0 |
| 177 | 497.20 | -1044.91 | 1550.0 |
| 178 | 403.30 | -1079.28 | 1550.0 |
| 179 | 322.43 | -1137.78 | 1550.0 |
| 180 | 227.82 | -1167.23 | 1550.0 |
| 181 | 130.39 | -1168.32 | 1550.0 |
| 182 | 34.91 | -1173.97 | 1550.0 |
| 183 | -39.12 | -1233.39 | 1550.0 |
| 184 | -96.46 | -1314.90 | 1550.0 |
| 185 | -156.07 | -1394.98 | 1550.0 |
| 186 | -205.30 | -1481.71 | 1550.0 |
| 187 | -204.52 | -1573.17 | 1550.0 |
| 188 | -169.54 | -1666.85 | 1550.0 |
| 189 | -142.03 | -1760.92 | 1550.0 |
| 190 | -158.73 | -1857.76 | 1550.0 |
| 191 | -968.30 | -1154.00 | 1600.0 |
| 192 | -892.77 | -1088.46 | 1600.0 |
| 193 | -819.49 | -1020.77 | 1600.0 |
| 194 | -757.30 | -942.46 | 1600.0 |
| 195 | -675.15 | -895.64 | 1600.0 |
| 196 | -585.63 | -905.92 | 1600.0 |
| 197 | -508.86 | -970.00 | 1600.0 |
| 198 | -417.78 | -1005.77 | 1600.0 |
| 199 | -334.77 | -950.01 | 1600.0 |
| 200 | -255.29 | -890.92 | 1600.0 |
| 201 | -204.35 | -804.86 | 1600.0 |
| 202 | -159.86 | -716.30 | 1600.0 |
| 203 | -139.06 | -618.48 | 1600.0 |
| 204 | -118.79 | -520.56 | 1600.0 |
| 205 | -49.84 | -532.54 | 1600.0 |
| 206 | 28.20 | -591.77 | 1600.0 |
| 207 | 87.74 | -670.67 | 1600.0 |
| 208 | 175.61 | -700.21 | 1600.0 |
| 209 | 273.20 | -683.55 | 1600.0 |
| 210 | 363.76 | -725.97 | 1600.0 |
| 211 | 449.57 | -776.76 | 1600.0 |
| 212 | 533.09 | -831.71 | 1600.0 |

| | | | |
|-----|----------|----------|--------|
| 213 | 613.28 | -886.14 | 1600.0 |
| 214 | 605.14 | -974.45 | 1600.0 |
| 215 | 505.14 | -974.89 | 1600.0 |
| 216 | 405.54 | -983.70 | 1600.0 |
| 217 | 329.91 | -1045.15 | 1600.0 |
| 218 | 242.32 | -1090.34 | 1600.0 |
| 219 | 148.15 | -1117.47 | 1600.0 |
| 220 | 49.00 | -1104.47 | 1600.0 |
| 221 | -41.04 | -1134.31 | 1600.0 |
| 222 | -119.15 | -1193.23 | 1600.0 |
| 223 | -168.03 | -1280.22 | 1600.0 |
| 224 | -236.48 | -1352.48 | 1600.0 |
| 225 | -290.16 | -1435.55 | 1600.0 |
| 226 | -275.34 | -1529.47 | 1600.0 |
| 227 | -214.50 | -1608.79 | 1600.0 |
| 228 | -180.10 | -1700.85 | 1600.0 |
| 229 | -178.48 | -1798.51 | 1600.0 |
| 230 | -219.09 | -1882.81 | 1600.0 |
| 231 | -1031.00 | -1233.00 | 1650.0 |
| 232 | -954.39 | -1168.72 | 1650.0 |
| 233 | -878.18 | -1104.01 | 1650.0 |
| 234 | -806.12 | -1034.68 | 1650.0 |
| 235 | -732.09 | -971.02 | 1650.0 |
| 236 | -632.97 | -982.16 | 1650.0 |
| 237 | -554.04 | -1038.00 | 1650.0 |
| 238 | -454.04 | -1038.00 | 1650.0 |
| 239 | -357.89 | -1015.09 | 1650.0 |
| 240 | -276.34 | -962.26 | 1650.0 |
| 241 | -207.41 | -889.82 | 1650.0 |
| 242 | -161.50 | -802.06 | 1650.0 |
| 243 | -121.24 | -710.52 | 1650.0 |
| 244 | -86.00 | -617.44 | 1650.0 |
| 245 | -44.24 | -592.65 | 1650.0 |
| 246 | 26.73 | -663.09 | 1650.0 |
| 247 | 96.77 | -734.47 | 1650.0 |
| 248 | 173.41 | -730.50 | 1650.0 |
| 249 | 263.73 | -707.53 | 1650.0 |
| 250 | 353.09 | -746.52 | 1650.0 |
| 251 | 436.37 | -801.87 | 1650.0 |
| 252 | 513.99 | -863.76 | 1650.0 |
| 253 | 494.41 | -909.57 | 1650.0 |
| 254 | 400.18 | -939.12 | 1650.0 |
| 255 | 314.16 | -990.11 | 1650.0 |
| 256 | 220.57 | -1024.75 | 1650.0 |
| 257 | 122.47 | -1037.26 | 1650.0 |
| 258 | 22.92 | -1045.40 | 1650.0 |
| 259 | -74.25 | -1066.60 | 1650.0 |
| 260 | -148.68 | -1120.93 | 1650.0 |
| 261 | -187.00 | -1212.85 | 1650.0 |
| 262 | -236.43 | -1299.54 | 1650.0 |
| 263 | -306.33 | -1370.72 | 1650.0 |
| 264 | -350.94 | -1456.29 | 1650.0 |
| 265 | -314.23 | -1548.03 | 1650.0 |
| 266 | -263.28 | -1633.68 | 1650.0 |
| 267 | -231.17 | -1727.95 | 1650.0 |

| | | | |
|-----|---------|----------|--------|
| 268 | -260.51 | -1817.95 | 1650.0 |
| 269 | -353.37 | -1844.41 | 1650.0 |
| 270 | -986.30 | -1243.00 | 1700.0 |
| 271 | -912.98 | -1174.99 | 1700.0 |
| 272 | -837.89 | -1109.02 | 1700.0 |
| 273 | -760.69 | -1045.46 | 1700.0 |
| 274 | -668.53 | -1048.52 | 1700.0 |
| 275 | -573.52 | -1079.40 | 1700.0 |
| 276 | -479.12 | -1105.68 | 1700.0 |
| 277 | -382.93 | -1078.37 | 1700.0 |
| 278 | -297.60 | -1030.16 | 1700.0 |
| 279 | -220.02 | -967.07 | 1700.0 |
| 280 | -164.39 | -885.00 | 1700.0 |
| 281 | -119.53 | -796.00 | 1700.0 |
| 282 | -68.87 | -711.94 | 1700.0 |
| 283 | .85 | -704.74 | 1700.0 |
| 284 | 71.38 | -775.64 | 1700.0 |
| 285 | 160.47 | -820.99 | 1700.0 |
| 286 | 230.47 | -756.32 | 1700.0 |
| 287 | 322.25 | -756.19 | 1700.0 |
| 288 | 411.22 | -801.17 | 1700.0 |
| 289 | 363.67 | -872.63 | 1700.0 |
| 290 | 274.72 | -918.31 | 1700.0 |
| 291 | 184.43 | -961.28 | 1700.0 |
| 292 | 89.23 | -984.24 | 1700.0 |
| 293 | -10.70 | -987.48 | 1700.0 |
| 294 | -109.31 | -1004.10 | 1700.0 |
| 295 | -189.75 | -1060.08 | 1700.0 |
| 296 | -218.61 | -1153.82 | 1700.0 |
| 297 | -268.76 | -1238.19 | 1700.0 |
| 298 | -330.16 | -1317.11 | 1700.0 |
| 299 | -392.54 | -1395.28 | 1700.0 |
| 300 | -398.17 | -1492.83 | 1700.0 |
| 301 | -353.26 | -1580.74 | 1700.0 |
| 302 | -310.96 | -1670.43 | 1700.0 |
| 303 | -286.32 | -1767.34 | 1700.0 |
| 304 | -355.80 | -1787.21 | 1700.0 |
| 305 | -453.30 | -1774.62 | 1700.0 |
| 306 | -538.25 | -1721.86 | 1700.0 |
| 307 | -612.72 | -1657.00 | 1700.0 |
| 308 | -677.82 | -1581.19 | 1700.0 |
| 309 | -754.80 | -1517.56 | 1700.0 |
| 310 | -839.38 | -1510.82 | 1700.0 |
| 311 | -853.90 | -1293.00 | 1750.0 |
| 312 | -799.00 | -1209.42 | 1750.0 |
| 313 | -744.10 | -1125.83 | 1750.0 |
| 314 | -645.12 | -1126.36 | 1750.0 |
| 315 | -545.19 | -1129.97 | 1750.0 |
| 316 | -445.30 | -1134.18 | 1750.0 |
| 317 | -351.13 | -1167.83 | 1750.0 |
| 318 | -295.66 | -1213.28 | 1750.0 |
| 319 | -359.08 | -1290.14 | 1750.0 |
| 320 | -420.22 | -1367.27 | 1750.0 |
| 321 | -448.91 | -1459.61 | 1750.0 |

| | | | |
|-----|---------|----------|--------|
| 322 | -434.79 | -1558.40 | 1750.0 |
| 323 | -407.74 | -1654.67 | 1750.0 |
| 324 | -485.92 | -1641.31 | 1750.0 |
| 325 | -568.63 | -1587.71 | 1750.0 |
| 326 | -644.55 | -1522.67 | 1750.0 |
| 327 | -718.91 | -1455.80 | 1750.0 |
| 328 | -701.60 | -1303.00 | 1800.0 |
| 329 | -642.91 | -1190.81 | 1800.0 |
| 330 | -495.98 | -1171.51 | 1800.0 |
| 331 | -362.37 | -1189.33 | 1800.0 |
| 332 | -440.95 | -1313.07 | 1800.0 |
| 333 | -499.89 | -1448.63 | 1800.0 |

* Note: Coordinates referenced to boilerhouse stack at
United Refining Company

Easterly: 655.660 km
Northerly: 4632.170 km

TABLE 3
HILL #3
RECEPTORS

HILL 3

RECEPTOR INFORMATION

| RECEPTOR NUMBER | EAST COORD * [METERS] | NORTH COORD * [METERS] | ELEVATION ABOVE MSL [FEET] |
|--------------------|-------------------------------|--------------------------------|------------------------------------|
| 1 | -204.20 | 126.90 | 1185.0 |
| 2 | -66.87 | -18.50 | 1185.0 |
| 3 | 91.33 | -139.93 | 1185.0 |
| 4 | 266.63 | -232.87 | 1185.0 |
| 5 | 454.91 | -296.89 | 1185.0 |
| 6 | 654.74 | -305.01 | 1185.0 |
| 7 | 854.07 | -298.29 | 1185.0 |
| 8 | 1052.53 | -274.06 | 1185.0 |
| 9 | 1249.34 | -238.48 | 1185.0 |
| 10 | 1447.46 | -211.19 | 1185.0 |
| 11 | 1639.43 | -155.96 | 1185.0 |
| 12 | 307.20 | 340.30 | 1240.0 |
| 13 | 336.95 | 435.77 | 1240.0 |
| 14 | 366.71 | 531.24 | 1240.0 |
| 15 | 380.66 | 629.93 | 1240.0 |
| 16 | 390.54 | 729.44 | 1240.0 |
| 17 | 470.55 | 763.82 | 1240.0 |
| 18 | 561.01 | 785.47 | 1240.0 |
| 19 | 567.55 | 885.25 | 1240.0 |
| 20 | 619.63 | 950.46 | 1240.0 |
| 21 | 713.99 | 983.56 | 1240.0 |
| 22 | 737.56 | 903.21 | 1240.0 |
| 23 | 749.31 | 803.90 | 1240.0 |
| 24 | 749.17 | 704.17 | 1240.0 |
| 25 | 742.70 | 604.43 | 1240.0 |
| 26 | 730.97 | 505.12 | 1240.0 |
| 27 | 768.74 | 414.66 | 1240.0 |
| 28 | 724.43 | 364.85 | 1240.0 |
| 29 | 631.82 | 330.31 | 1240.0 |
| 30 | 551.47 | 270.79 | 1240.0 |
| 31 | 484.70 | 199.47 | 1240.0 |
| 32 | 437.04 | 111.56 | 1240.0 |
| 33 | 477.23 | 29.02 | 1240.0 |
| 34 | 535.24 | -52.44 | 1240.0 |
| 35 | 625.09 | -95.38 | 1240.0 |
| 36 | 717.29 | -132.51 | 1240.0 |
| 37 | 816.47 | -145.32 | 1240.0 |
| 38 | 915.56 | -158.61 | 1240.0 |
| 39 | 1012.94 | -181.34 | 1240.0 |
| 40 | 1110.47 | -202.00 | 1240.0 |
| 41 | 1210.04 | -192.82 | 1240.0 |
| 42 | 1309.62 | -183.63 | 1240.0 |
| 43 | 1408.64 | -169.92 | 1240.0 |
| 44 | 1507.45 | -154.58 | 1240.0 |
| 45 | 1602.78 | -126.20 | 1240.0 |

| | | | |
|-----|---------|---------|--------|
| 46 | 1696.07 | -90.18 | 1240.0 |
| 47 | 1788.33 | -51.70 | 1240.0 |
| 48 | 1879.56 | -10.74 | 1240.0 |
| 49 | 1969.82 | 32.28 | 1240.0 |
| 50 | 1286.00 | 1576.00 | 1300.0 |
| 51 | 1232.65 | 1491.42 | 1300.0 |
| 52 | 1179.29 | 1406.85 | 1300.0 |
| 53 | 1119.53 | 1327.12 | 1300.0 |
| 54 | 1052.54 | 1252.88 | 1300.0 |
| 55 | 989.83 | 1176.55 | 1300.0 |
| 56 | 972.68 | 1078.03 | 1300.0 |
| 57 | 957.60 | 979.41 | 1300.0 |
| 58 | 964.55 | 879.65 | 1300.0 |
| 59 | 972.86 | 780.02 | 1300.0 |
| 60 | 985.33 | 680.80 | 1300.0 |
| 61 | 997.80 | 581.58 | 1300.0 |
| 62 | 1006.51 | 481.98 | 1300.0 |
| 63 | 1014.69 | 382.31 | 1300.0 |
| 64 | 1024.89 | 282.83 | 1300.0 |
| 65 | 958.56 | 249.34 | 1300.0 |
| 66 | 858.67 | 244.79 | 1300.0 |
| 67 | 759.05 | 238.47 | 1300.0 |
| 68 | 662.71 | 211.68 | 1300.0 |
| 69 | 573.72 | 173.00 | 1300.0 |
| 70 | 563.08 | 112.06 | 1300.0 |
| 71 | 656.19 | 75.59 | 1300.0 |
| 72 | 755.24 | 80.02 | 1300.0 |
| 73 | 854.88 | 88.50 | 1300.0 |
| 74 | 950.96 | 73.15 | 1300.0 |
| 75 | 1041.63 | 31.62 | 1300.0 |
| 76 | 1127.23 | -20.07 | 1300.0 |
| 77 | 1218.01 | -59.08 | 1300.0 |
| 78 | 1315.33 | -82.07 | 1300.0 |
| 79 | 1414.28 | -78.22 | 1300.0 |
| 80 | 1513.67 | -67.15 | 1300.0 |
| 81 | 1609.79 | -40.33 | 1300.0 |
| 82 | 1704.05 | -6.96 | 1300.0 |
| 83 | 1798.08 | 27.06 | 1300.0 |
| 84 | 1885.61 | 74.99 | 1300.0 |
| 85 | 1972.02 | 125.33 | 1300.0 |
| 86 | 2059.40 | 173.94 | 1300.0 |
| 87 | 2147.29 | 221.63 | 1300.0 |
| 88 | 1302.00 | 1390.00 | 1350.0 |
| 89 | 1224.84 | 1326.39 | 1350.0 |
| 90 | 1148.38 | 1262.03 | 1350.0 |
| 91 | 1079.86 | 1189.19 | 1350.0 |
| 92 | 1021.91 | 1111.15 | 1350.0 |
| 93 | 1020.95 | 1011.16 | 1350.0 |
| 94 | 1020.00 | 911.16 | 1350.0 |
| 95 | 1039.05 | 813.00 | 1350.0 |
| 96 | 1057.65 | 714.75 | 1350.0 |
| 97 | 1073.78 | 616.06 | 1350.0 |
| 98 | 1089.59 | 517.32 | 1350.0 |
| 99 | 1104.99 | 418.51 | 1350.0 |
| 100 | 1131.78 | 323.56 | 1350.0 |

| | | | |
|-----|---------|---------|--------|
| 101 | 1145.60 | 238.96 | 1350.0 |
| 102 | 1082.31 | 161.54 | 1350.0 |
| 103 | 1102.13 | 81.91 | 1350.0 |
| 104 | 1161.22 | 1.23 | 1350.0 |
| 105 | 1246.07 | -36.97 | 1350.0 |
| 106 | 1344.92 | -52.13 | 1350.0 |
| 107 | 1443.70 | -38.45 | 1350.0 |
| 108 | 1542.49 | -22.88 | 1350.0 |
| 109 | 1636.61 | 8.46 | 1350.0 |
| 110 | 1728.00 | 49.05 | 1350.0 |
| 111 | 1818.76 | 90.91 | 1350.0 |
| 112 | 1906.42 | 139.03 | 1350.0 |
| 113 | 1994.87 | 185.64 | 1350.0 |
| 114 | 2084.40 | 230.19 | 1350.0 |
| 115 | 1555.00 | 1409.00 | 1420.0 |
| 116 | 1467.01 | 1361.48 | 1420.0 |
| 117 | 1379.03 | 1313.96 | 1420.0 |
| 118 | 1292.82 | 1263.54 | 1420.0 |
| 119 | 1210.64 | 1206.56 | 1420.0 |
| 120 | 1146.63 | 1133.89 | 1420.0 |
| 121 | 1112.94 | 1042.72 | 1420.0 |
| 122 | 1129.71 | 944.14 | 1420.0 |
| 123 | 1183.27 | 861.19 | 1420.0 |
| 124 | 1194.53 | 768.71 | 1420.0 |
| 125 | 1179.97 | 669.77 | 1420.0 |
| 126 | 1178.80 | 570.24 | 1420.0 |
| 127 | 1188.47 | 471.47 | 1420.0 |
| 128 | 1234.09 | 382.49 | 1420.0 |
| 129 | 1301.42 | 309.78 | 1420.0 |
| 130 | 1311.62 | 233.43 | 1420.0 |
| 131 | 1276.15 | 139.93 | 1420.0 |
| 132 | 1278.37 | 40.92 | 1420.0 |
| 133 | 1343.66 | -6.46 | 1420.0 |
| 134 | 1442.13 | -23.56 | 1420.0 |
| 135 | 1541.10 | -9.28 | 1420.0 |
| 136 | 1639.98 | 5.31 | 1420.0 |
| 137 | 1730.15 | 48.56 | 1420.0 |
| 138 | 1819.52 | 93.32 | 1420.0 |
| 139 | 1906.32 | 142.98 | 1420.0 |
| 140 | 1993.96 | 190.64 | 1420.0 |
| 141 | 2078.92 | 243.39 | 1420.0 |
| 142 | 1743.00 | 1352.00 | 1500.0 |
| 143 | 1652.18 | 1310.14 | 1500.0 |
| 144 | 1560.21 | 1270.96 | 1500.0 |
| 145 | 1467.44 | 1233.64 | 1500.0 |
| 146 | 1371.94 | 1204.48 | 1500.0 |
| 147 | 1275.35 | 1178.58 | 1500.0 |
| 148 | 1206.27 | 1122.83 | 1500.0 |
| 149 | 1182.86 | 1029.29 | 1500.0 |
| 150 | 1272.96 | 986.07 | 1500.0 |
| 151 | 1335.62 | 909.82 | 1500.0 |
| 152 | 1329.69 | 818.49 | 1500.0 |
| 153 | 1295.11 | 724.81 | 1500.0 |
| 154 | 1275.82 | 626.69 | 1500.0 |

| | | | |
|-----|---------|---------|--------|
| 155 | 1284.96 | 529.92 | 1500.0 |
| 156 | 1334.69 | 460.54 | 1500.0 |
| 157 | 1428.46 | 433.59 | 1500.0 |
| 158 | 1494.90 | 374.51 | 1500.0 |
| 159 | 1479.57 | 275.69 | 1500.0 |
| 160 | 1444.90 | 182.33 | 1500.0 |
| 161 | 1406.31 | 90.08 | 1500.0 |
| 162 | 1387.79 | -7.04 | 1500.0 |
| 163 | 1446.64 | -25.27 | 1500.0 |
| 164 | 1545.22 | -8.49 | 1500.0 |
| 165 | 1643.80 | 8.29 | 1500.0 |
| 166 | 1732.14 | 55.02 | 1500.0 |
| 167 | 1820.43 | 101.97 | 1500.0 |
| 168 | 1908.98 | 148.44 | 1500.0 |
| 169 | 1997.51 | 194.94 | 1500.0 |
| 170 | 2076.13 | 255.97 | 1500.0 |
| 171 | 2152.70 | 320.26 | 1500.0 |
| 172 | 1777.00 | 1279.00 | 1550.0 |
| 173 | 1678.89 | 1259.67 | 1550.0 |
| 174 | 1580.77 | 1240.35 | 1550.0 |
| 175 | 1489.51 | 1199.58 | 1550.0 |
| 176 | 395.89 | 1169.22 | 1550.0 |
| 177 | 1296.86 | 1160.91 | 1550.0 |
| 178 | 1240.18 | 1114.08 | 1550.0 |
| 179 | 1300.40 | 1046.20 | 1550.0 |
| 180 | 1399.09 | 1030.07 | 1550.0 |
| 181 | 1433.22 | 951.81 | 1550.0 |
| 182 | 1445.54 | 852.57 | 1550.0 |
| 183 | 1423.34 | 756.79 | 1550.0 |
| 184 | 1406.66 | 662.75 | 1550.0 |
| 185 | 1442.52 | 569.40 | 1550.0 |
| 186 | 1513.01 | 507.17 | 1550.0 |
| 187 | 1602.00 | 461.55 | 1550.0 |
| 188 | 1605.32 | 369.32 | 1550.0 |
| 189 | 1595.28 | 269.83 | 1550.0 |
| 190 | 1542.75 | 186.54 | 1550.0 |
| 191 | 1561.78 | 108.59 | 1550.0 |
| 192 | 1632.68 | 60.86 | 1550.0 |
| 193 | 1723.14 | 103.50 | 1550.0 |
| 194 | 1807.34 | 156.25 | 1550.0 |
| 195 | 1886.66 | 217.03 | 1550.0 |
| 196 | 1971.91 | 269.30 | 1550.0 |
| 197 | 2059.62 | 317.16 | 1550.0 |
| 198 | 1968.00 | 1312.00 | 1600.0 |
| 199 | 1877.59 | 1269.26 | 1600.0 |
| 200 | 1786.10 | 1229.47 | 1600.0 |
| 201 | 1689.52 | 1203.57 | 1600.0 |
| 202 | 1594.59 | 1172.96 | 1600.0 |
| 203 | 1522.07 | 1123.30 | 1600.0 |
| 204 | 1547.14 | 1026.50 | 1600.0 |
| 205 | 1534.70 | 929.98 | 1600.0 |
| 206 | 1508.13 | 833.58 | 1600.0 |
| 207 | 1497.00 | 735.08 | 1600.0 |
| 208 | 1497.00 | 635.08 | 1600.0 |
| 209 | 1580.73 | 588.11 | 1600.0 |

| | | | |
|-----|---------|---------|--------|
| 210 | 1659.43 | 532.45 | 1600.0 |
| 211 | 1707.90 | 446.34 | 1600.0 |
| 212 | 1676.68 | 351.34 | 1600.0 |
| 213 | 1645.47 | 256.33 | 1600.0 |
| 214 | 1625.24 | 158.41 | 1600.0 |
| 215 | 1693.82 | 135.16 | 1600.0 |
| 216 | 1783.30 | 166.08 | 1600.0 |
| 217 | 1860.37 | 229.79 | 1600.0 |
| 218 | 1937.65 | 293.20 | 1600.0 |
| 219 | 2025.60 | 340.79 | 1600.0 |
| 220 | 2016.00 | 1208.00 | 1650.0 |
| 221 | 1920.14 | 1179.52 | 1650.0 |
| 222 | 1824.24 | 1151.18 | 1650.0 |
| 223 | 1728.13 | 1123.56 | 1650.0 |
| 224 | 1655.57 | 1068.40 | 1650.0 |
| 225 | 1638.30 | 970.78 | 1650.0 |
| 226 | 1625.79 | 871.79 | 1650.0 |
| 227 | 1586.75 | 779.72 | 1650.0 |
| 228 | 1591.37 | 689.09 | 1650.0 |
| 229 | 1654.73 | 619.72 | 1650.0 |
| 230 | 1747.40 | 582.15 | 1650.0 |
| 231 | 1791.14 | 493.50 | 1650.0 |
| 232 | 1791.26 | 397.27 | 1650.0 |
| 233 | 1770.60 | 300.30 | 1650.0 |
| 234 | 1774.60 | 243.96 | 1650.0 |
| 235 | 1855.81 | 294.62 | 1650.0 |
| 236 | 1917.51 | 373.31 | 1650.0 |
| 237 | 1997.54 | 426.85 | 1650.0 |
| 238 | 2092.47 | 458.02 | 1650.0 |
| 239 | 2201.00 | 1353.00 | 1700.0 |
| 240 | 2136.68 | 1276.43 | 1700.0 |
| 241 | 2071.46 | 1200.93 | 1700.0 |
| 242 | 1985.14 | 1150.44 | 1700.0 |
| 243 | 1896.34 | 1106.94 | 1700.0 |
| 244 | 1797.53 | 1091.55 | 1700.0 |
| 245 | 1734.27 | 1035.29 | 1700.0 |
| 246 | 1708.59 | 939.51 | 1700.0 |
| 247 | 1673.81 | 845.76 | 1700.0 |
| 248 | 1658.22 | 747.37 | 1700.0 |
| 249 | 1712.74 | 676.20 | 1700.0 |
| 250 | 1791.91 | 615.27 | 1700.0 |
| 251 | 1845.38 | 530.77 | 1700.0 |
| 252 | 1835.91 | 435.52 | 1700.0 |
| 253 | 1807.03 | 339.86 | 1700.0 |
| 254 | 1784.68 | 259.59 | 1700.0 |
| 255 | 1867.03 | 316.31 | 1700.0 |
| 256 | 1948.79 | 373.88 | 1700.0 |
| 257 | 2029.88 | 432.40 | 1700.0 |
| 258 | 2122.76 | 466.19 | 1700.0 |
| 259 | 2204.03 | 514.54 | 1700.0 |
| 260 | 2032.00 | 1127.00 | 1750.0 |
| 261 | 1889.26 | 1080.90 | 1750.0 |
| 262 | 1794.00 | 969.25 | 1750.0 |
| 263 | 1719.23 | 840.48 | 1750.0 |

| | | | |
|-----|---------|---------|--------|
| 264 | 1759.77 | 722.74 | 1750.0 |
| 265 | 1860.32 | 611.49 | 1750.0 |
| 266 | 1893.25 | 475.37 | 1750.0 |
| 267 | 1962.46 | 426.83 | 1750.0 |
| 268 | 2087.55 | 509.49 | 1750.0 |
| 269 | 2206.88 | 600.38 | 1750.0 |
| 270 | 2217.00 | 1180.00 | 1800.0 |
| 271 | 2094.27 | 1093.76 | 1800.0 |
| 272 | 1956.95 | 1035.60 | 1800.0 |
| 273 | 1853.78 | 933.10 | 1800.0 |
| 274 | 1858.04 | 789.48 | 1800.0 |
| 275 | 1951.97 | 672.54 | 1800.0 |
| 276 | 2055.81 | 573.37 | 1800.0 |
| 277 | 2182.06 | 603.23 | 1800.0 |
| 278 | 2219.68 | 742.72 | 1800.0 |
| 279 | 2248.79 | 888.51 | 1800.0 |
| 280 | 2195.00 | 1076.00 | 1850.0 |
| 281 | 2056.47 | 1024.81 | 1850.0 |
| 282 | 1964.59 | 914.74 | 1850.0 |
| 283 | 1986.33 | 770.15 | 1850.0 |
| 284 | 2073.74 | 650.62 | 1850.0 |
| 285 | 2149.14 | 737.81 | 1850.0 |
| 286 | 2143.00 | 996.20 | 1900.0 |
| 287 | 2039.47 | 900.63 | 1900.0 |
| 288 | 2064.42 | 763.63 | 1900.0 |

* Note: Coordinates referenced to boilerhouse stack at
United Refining Company

Easterly = 655.660 km
Northerly = 4632.170 km

TABLE 4
HILLS 4 & 5
RECEPTORS

HILLS 4 AND 5

RECEPTOR INFORMATION

| RECEPTOR NUMBER | EAST COORD * | NORTH COORD * | HEIGHT ABOVE LOCAL GRD LVL |
|--------------------|-----------------|------------------|-------------------------------|
| | | [METERS] | |
| 1 | -1232.00 | 2566.00 | 1185.0 |
| 2 | -1137.27 | 2390.00 | 1185.0 |
| 3 | -1075.32 | 2203.21 | 1185.0 |
| 4 | -1097.49 | 2004.45 | 1185.0 |
| 5 | -1148.12 | 1811.37 | 1185.0 |
| 6 | -1145.51 | 1623.13 | 1185.0 |
| 7 | -1019.40 | 1481.31 | 1185.0 |
| 8 | -852.57 | 1373.28 | 1185.0 |
| .9 | -715.00 | 1232.96 | 1185.0 |
| 10 | -582.43 | 1079.09 | 1185.0 |
| 11 | -456.20 | 923.96 | 1185.0 |
| 12 | -354.21 | 752.09 | 1185.0 |
| 13 | -250.19 | 581.35 | 1185.0 |
| 14 | -145.26 | 411.25 | 1185.0 |
| 15 | -964.80 | 2709.00 | 1240.0 |
| 16 | -950.92 | 2509.48 | 1240.0 |
| 17 | -911.13 | 2315.26 | 1240.0 |
| 18 | -845.56 | 2126.32 | 1240.0 |
| 19 | -777.42 | 1938.32 | 1240.0 |
| 20 | -690.23 | 1760.95 | 1240.0 |
| 21 | -556.84 | 1611.92 | 1240.0 |
| 22 | -425.77 | 1460.87 | 1240.0 |
| 23 | -303.38 | 1302.78 | 1240.0 |
| 24 | -185.71 | 1141.15 | 1240.0 |
| 25 | -75.50 | 974.25 | 1240.0 |
| 26 | 24.35 | 801.00 | 1240.0 |
| 27 | 124.23 | 627.73 | 1240.0 |
| 28 | 120.87 | 446.79 | 1240.0 |
| 29 | 212.13 | 337.41 | 1240.0 |
| 30 | 327.89 | 463.83 | 1240.0 |
| 31 | 388.35 | 653.29 | 1240.0 |
| 32 | 488.83 | 778.93 | 1240.0 |
| 33 | 580.99 | 912.61 | 1240.0 |
| 34 | 745.29 | 935.43 | 1240.0 |
| 35 | 776.67 | 742.65 | 1240.0 |
| 36 | 747.55 | 545.24 | 1240.0 |
| 37 | 761.28 | 366.69 | 1240.0 |
| 38 | 575.89 | 295.81 | 1240.0 |
| 39 | 452.98 | 148.05 | 1240.0 |
| 40 | 514.22 | -19.47 | 1240.0 |
| 41 | -822.20 | 2796.00 | 1300.0 |
| 42 | -839.80 | 2553.08 | 1300.0 |
| 43 | -729.50 | 2329.15 | 1300.0 |
| 44 | -632.46 | 2124.31 | 1300.0 |
| 45 | -570.65 | 1888.24 | 1300.0 |
| 46 | -401.40 | 1704.74 | 1300.0 |
| 47 | -202.60 | 1561.80 | 1300.0 |

| | | | |
|-----|---------|---------|--------|
| 48 | -116.26 | 1367.59 | 1300.0 |
| 49 | 27.54 | 1163.57 | 1300.0 |
| 50 | 126.19 | 936.36 | 1300.0 |
| 51 | 253.71 | 798.54 | 1300.0 |
| 52 | 360.71 | 1013.74 | 1300.0 |
| 53 | 280.36 | 1245.80 | 1300.0 |
| 54 | 205.90 | 1465.62 | 1300.0 |
| 55 | 272.74 | 1697.83 | 1300.0 |
| 56 | 358.56 | 1638.70 | 1300.0 |
| 57 | 562.06 | 1505.03 | 1300.0 |
| 58 | 794.88 | 1535.76 | 1300.0 |
| 59 | 1032.31 | 1559.56 | 1300.0 |
| 60 | 1236.16 | 1702.34 | 1300.0 |
| 61 | -766.30 | 2783.00 | 1350.0 |
| 62 | -742.59 | 2534.71 | 1350.0 |
| 63 | -645.07 | 2306.18 | 1350.0 |
| 64 | -495.26 | 2215.33 | 1350.0 |
| 65 | -544.06 | 1983.21 | 1350.0 |
| 66 | -410.80 | 1792.61 | 1350.0 |
| 67 | -213.67 | 1639.63 | 1350.0 |
| 68 | -50.99 | 1637.80 | 1350.0 |
| 69 | -37.65 | 1390.69 | 1350.0 |
| 70 | 112.85 | 1366.35 | 1350.0 |
| 71 | 202.07 | 1595.41 | 1350.0 |
| 72 | 189.88 | 1836.85 | 1350.0 |
| 73 | 264.25 | 2051.55 | 1350.0 |
| 74 | 321.96 | 1981.38 | 1350.0 |
| 75 | 355.91 | 1736.94 | 1350.0 |
| 76 | 536.24 | 1591.76 | 1350.0 |
| 77 | 771.23 | 1634.34 | 1350.0 |
| 78 | 925.12 | 1572.35 | 1350.0 |
| 79 | 1138.85 | 1692.36 | 1350.0 |
| 80 | -676.30 | 2792.00 | 1420.0 |
| 81 | -665.09 | 2543.39 | 1420.0 |
| 82 | -546.59 | 2337.39 | 1420.0 |
| 83 | -383.62 | 2332.23 | 1420.0 |
| 84 | -479.09 | 2105.26 | 1420.0 |
| 85 | -432.89 | 1875.14 | 1420.0 |
| 86 | -217.54 | 1780.20 | 1420.0 |
| 87 | -23.82 | 1938.22 | 1420.0 |
| 88 | 154.57 | 2113.36 | 1420.0 |
| 89 | 313.28 | 2306.38 | 1420.0 |
| 90 | 501.74 | 2468.65 | 1420.0 |
| 91 | 478.81 | 2265.09 | 1420.0 |
| 92 | 402.88 | 2027.22 | 1420.0 |
| 93 | 403.07 | 1781.07 | 1420.0 |
| 94 | 619.23 | 1674.17 | 1420.0 |
| 95 | 809.28 | 1798.03 | 1420.0 |
| 96 | 914.16 | 1769.70 | 1420.0 |
| 97 | 1090.83 | 1729.79 | 1420.0 |
| 98 | -587.50 | 2791.00 | 1500.0 |
| 99 | -586.80 | 2495.86 | 1500.0 |
| 100 | -355.00 | 2510.47 | 1500.0 |
| 101 | -308.28 | 2335.11 | 1500.0 |
| 102 | -410.49 | 2055.53 | 1500.0 |
| 103 | -299.61 | 1839.31 | 1500.0 |

| | | | |
|-----|---------|---------|--------|
| 104 | -63.47 | 2017.99 | 1500.0 |
| 105 | 124.29 | 2249.02 | 1500.0 |
| 106 | 316.56 | 2446.72 | 1500.0 |
| 107 | 442.35 | 2710.74 | 1500.0 |
| 108 | 439.14 | 3008.55 | 1500.0 |
| 109 | 536.14 | 3017.10 | 1500.0 |
| 110 | 632.02 | 2741.02 | 1500.0 |
| 111 | 643.42 | 2444.24 | 1500.0 |
| 112 | 539.69 | 2162.77 | 1500.0 |
| 113 | 438.93 | 1881.16 | 1500.0 |
| 114 | 673.47 | 1756.45 | 1500.0 |
| 115 | 855.39 | 1983.42 | 1500.0 |
| 116 | 976.98 | 1792.89 | 1500.0 |
| 117 | 1245.61 | 1894.72 | 1500.0 |
| 118 | -541.30 | 2777.00 | 1550.0 |
| 119 | -545.47 | 2489.87 | 1550.0 |
| 120 | -282.92 | 2588.61 | 1550.0 |
| 121 | -278.30 | 2370.19 | 1550.0 |
| 122 | -352.96 | 2080.65 | 1550.0 |
| 123 | -243.23 | 1952.34 | 1550.0 |
| 124 | -18.28 | 2148.78 | 1550.0 |
| 125 | 92.76 | 2413.60 | 1550.0 |
| 126 | 320.28 | 2527.79 | 1550.0 |
| 127 | 367.27 | 2813.70 | 1550.0 |
| 128 | 364.39 | 3103.31 | 1550.0 |
| 129 | 529.02 | 3334.98 | 1550.0 |
| 130 | 590.30 | 3283.70 | 1550.0 |
| 131 | 664.79 | 2993.43 | 1550.0 |
| 132 | 727.02 | 2700.93 | 1550.0 |
| 133 | 690.80 | 2424.23 | 1550.0 |
| 134 | 583.44 | 2144.97 | 1550.0 |
| 135 | 505.29 | 1868.15 | 1550.0 |
| 136 | 740.41 | 1891.48 | 1550.0 |
| 137 | 943.10 | 2056.21 | 1550.0 |
| 138 | 1094.78 | 1864.44 | 1550.0 |
| 139 | 1325.33 | 2037.36 | 1550.0 |
| 140 | -488.80 | 2819.00 | 1600.0 |
| 141 | -492.72 | 2539.83 | 1600.0 |
| 142 | -240.57 | 2663.75 | 1600.0 |
| 143 | -174.82 | 2514.61 | 1600.0 |
| 144 | -234.98 | 2224.25 | 1600.0 |
| 145 | -70.41 | 2164.12 | 1600.0 |
| 146 | 20.78 | 2419.82 | 1600.0 |
| 147 | 223.71 | 2514.43 | 1600.0 |
| 148 | 290.84 | 2786.56 | 1600.0 |
| 149 | 281.48 | 3083.39 | 1600.0 |
| 150 | 428.98 | 3254.09 | 1600.0 |
| 151 | 550.68 | 3522.64 | 1600.0 |
| 152 | 658.37 | 3615.77 | 1600.0 |
| 153 | 682.31 | 3318.07 | 1600.0 |
| 154 | 744.76 | 3027.48 | 1600.0 |
| 155 | 808.53 | 2743.09 | 1600.0 |
| 156 | 814.16 | 2520.46 | 1600.0 |
| 157 | 661.80 | 2262.89 | 1600.0 |
| 158 | 578.84 | 1977.50 | 1600.0 |
| 159 | 710.31 | 1958.93 | 1600.0 |

| | | | |
|-----|---------|---------|--------|
| 160 | 941.73 | 2129.97 | 1600.0 |
| 161 | 1073.28 | 1929.76 | 1600.0 |
| 162 | 1303.74 | 2101.50 | 1600.0 |
| 163 | 1342.30 | 2379.66 | 1600.0 |
| 164 | 1314.21 | 2592.18 | 1600.0 |
| 165 | -383.70 | 2954.00 | 1650.0 |
| 166 | -281.54 | 2742.34 | 1650.0 |
| 167 | -66.09 | 2623.33 | 1650.0 |
| 168 | -144.83 | 2343.86 | 1650.0 |
| 169 | -34.96 | 2372.54 | 1650.0 |
| 170 | 139.14 | 2566.73 | 1650.0 |
| 171 | 223.02 | 2800.77 | 1650.0 |
| 172 | 193.22 | 3097.65 | 1650.0 |
| 173 | 363.88 | 3295.18 | 1650.0 |
| 174 | 499.16 | 3549.47 | 1650.0 |
| 175 | 642.15 | 3766.21 | 1650.0 |
| 176 | 818.08 | 3582.47 | 1650.0 |
| 177 | 750.60 | 3318.40 | 1650.0 |
| 178 | 854.45 | 3036.95 | 1650.0 |
| 179 | 908.62 | 2752.13 | 1650.0 |
| 180 | 892.46 | 2488.29 | 1650.0 |
| 181 | 770.64 | 2216.75 | 1650.0 |
| 182 | 999.51 | 2212.58 | 1650.0 |
| 183 | 1195.48 | 2092.15 | 1650.0 |
| 184 | 1276.14 | 2342.22 | 1650.0 |
| 185 | 1190.77 | 2596.57 | 1650.0 |
| 186 | -59.30 | 3191.00 | 1700.0 |
| 187 | -295.70 | 3006.49 | 1700.0 |
| 188 | -115.95 | 2827.70 | 1700.0 |
| 189 | 104.08 | 2632.99 | 1700.0 |
| 190 | 165.78 | 2842.88 | 1700.0 |
| 191 | 141.40 | 3141.88 | 1700.0 |
| 192 | 319.05 | 3344.79 | 1700.0 |
| 193 | 463.26 | 3600.86 | 1700.0 |
| 194 | 605.97 | 3769.45 | 1700.0 |
| 195 | 899.53 | 3707.58 | 1700.0 |
| 196 | 947.12 | 3479.16 | 1700.0 |
| 197 | 921.19 | 3229.37 | 1700.0 |
| 198 | 947.29 | 2963.84 | 1700.0 |
| 199 | 1035.91 | 2678.33 | 1700.0 |
| 200 | 915.93 | 2428.25 | 1700.0 |
| 201 | 1036.65 | 2262.38 | 1700.0 |
| 202 | 1259.71 | 2233.73 | 1700.0 |
| 203 | 1131.68 | 2489.08 | 1700.0 |
| 204 | 1270.57 | 2736.17 | 1700.0 |
| 205 | 1485.19 | 2902.24 | 1700.0 |
| 206 | -42.65 | 3088.00 | 1750.0 |
| 207 | -39.30 | 3010.00 | 1800.0 |
| 208 | 3.22 | 2933.22 | 1800.0 |

* Note: Coordinates referenced to boilerhouse stack at
United Refining Company

Easterly = 655.660 km
Northerly = 4632.170 km

TABLE 5
EMISSION SOURCES
UNITED REFINING COMPANY
WARREN GENERATING STATION

T A B L E 5
STACK AND EMISSIONS PARAMETERS
FOR
UNITED REFINING COMPANY AND PENELEC SOURCES

United Refining Company

| SOURCE | UTM [E] | UTM [N] | STACK HT [m] | STACK DIAM [m] | STACK TEMP [K] | STACK VEL [m/s] | EMISSION RATE [gms/sec] |
|--------------------------|---------|----------|-----------------|-------------------|---------------------|--------------------|----------------------------|
| A-BOILERHOUSE HSE | 655.660 | 4632.170 | 68.58 | 2.44 | 672.0 | 11.44 | 24.58 |
| B-NO. 4 BOILER | 655.461 | 4632.394 | 45.72 | 1.70 | 505.4 | 12.37 | 3.06 |
| C-FCC CHARGE HEATER | 655.450 | 4632.392 | 38.10 | 1.22 | 560.9 | 10.51 | 0.14 |
| D-DHT1 HEATER | 655.906 | 4632.026 | 30.48 | 0.91 | 922.0 | 3.88 | 0.01 |
| E-PRE RACT REBOILER WEST | 655.865 | 4632.055 | 12.19 | 0.61 | 699.8 | 10.03 | 1.13 |
| F-PREFRACT REBOILER EAST | 655.868 | 4632.052 | 12.19 | 0.61 | 699.8 | 10.03 | 1.13 |
| G-OLD REFORMER HEATER | 655.911 | 4632.022 | 45.72 | 1.89 | 699.8 | 10.42 | 11.50 |
| H-CRUISE (WHECO) HEATER | 655.814 | 4632.110 | 45.72 | 2.59 | 699.8 | 15.05 | 26.27 |
| I-PRETREATER HEATER | 655.899 | 4632.129 | 51.82 | 1.89 | 588.7 | 3.84 | 3.53 |
| J-NEW REFORMER HEATER | 655.901 | 4632.028 | 45.72 | 2.13 | 533.2 | 6.64 | 0.28 |
| K-DEBUT REBOILER | 655.826 | 4632.095 | 30.48 | 0.85 | 922.0 | 12.79 | 0.05 |
| L-FCC REGENERATOR | 655.494 | 4632.454 | 45.72 | 2.13 | 533.2 | 15.21 | 35.91 |
| M-COMBO FLARE (BLOWDOWN) | 655.813 | 4632.026 | 7.32 | 3.05 | 1255.0 | 2.00 | 0.05 |
| N-FCC FLARE (BLOWDOWN) | 655.191 | 4632.492 | 10.67 | 3.35 | 1255.0 | 0.42 | 0.01 |
| O-NO. 5 BOILER | 655.887 | 4632.056 | 30.48 | 1.22 | 588.7 | 12.05 | 0.15 |
| Q-SATURATED GAS KVG | 655.774 | 4632.067 | 7.62 | 0.25 | 644.3 | 20.49 | 0.01 |
| U-T-241 HEATER | 654.848 | 4632.913 | 12.19 | 0.76 | 644.3 | 8.58 | 0.04 |
| V-DHT2 HEATER (NEW) | 655.934 | 4632.157 | 30.48 | 1.07 | 714.0 | 11.35 | 4.21 |
| W-SRU INCINERATOR (NEW) | 655.699 | 4632.127 | 38.10 | 0.76 | 922.0 | 18.94 | 1.51 |

NOTE: Base Elevation 1195 feet MSL

Pennsylvania Electric Warren Generating Station

| | | | | | | | |
|--------|---------|----------|-------|------|-------|-------|--------|
| Warren | 650.390 | 4632.950 | 61.00 | 4.72 | 498.0 | 16.01 | 493.00 |
|--------|---------|----------|-------|------|-------|-------|--------|

NOTE: Base Elevation 1186 feet MSL

TABLE 6

**MODELING RESULTS
[DER]**

HILLS 1, 2, 3, AND 4/5

MODELING RESULTS
{Department of Environmental Resources}
September, 1994

| Hill | Stab | Rcptr | Dist [m] (1) | Dir [deg] (1) | Elv [ft] (1) | Highest Hourly [ug/m ³] | WDir [deg] | WSpd [m/s] | HSH 3-Hr (3) | HSH 24-Hr (3) | Annual (3) |
|-------|------|-------|--------------------|---------------------|--------------------|---|---------------|---------------|--------------------|---------------------|---------------|
| | | | (2) | | | | | | | | |
| 1 | S | 339 | 992 | 273 | 1660 | 1310 | 075 | 1.0 | 993 | 276 | 57 |
| | U | 365 | 1302 | 269 | 1700 | 1202 | 074 | 1.0 | 897 | 220 | 54 |
| 2 | S | 204 | 534 | 193 | 1600 | 1312 | 030 | 2.0 | 994 | 276 | 57 |
| | U | 144 | 1263 | 170 | 1600 | 1565 | 353 | 1.0 | 1151 | 275 | 65 |
| 3 | S | 230 | 1842 | 072 | 1650 | 844 | 247 | 2.0 | 667 | 206 | 43 |
| | U | 212 | 1713 | 078 | 1600 | 1090 | 255 | 1.0 | 819 | 203 | 51 |
| 4 & 5 | S | 122 | 2110 | 350 | 1550 | 829 | 171 | 3.0 | 656 | 203 | 43 |
| | U | 123 | 1967 | 353 | 1550 | 840 | 175 | 1.0 | 644 | 166 | 43 |

Notes: (1) With reference to boilerstack at United Refining Company
 (2) (U) or (S) Unstable or stable, respectively
 (3) Includes background concentrations dependent upon stability category designated in (2)

| Neutral/Stable | | Unstable |
|----------------|----|----------|
| 3-hour | 76 | 56 |
| 24-hour | 79 | 40 |
| Annual | 18 | 18 |

TABLE 7

**MODELING RESULTS
[UNITED REFINING COMPANY]**

HILLS 1, 2, AND 3

MODELING RESULTS
 [United Refining Company]
 November 1992

| Hill | Stab | Rcptr | Dist [m] | Dir [deg] | Elv [ft] | Highest Hourly [ug/m ³] | WDir [deg] | WSpd [m/s] | HSH 3-Hr (3) | HSH 24-Hr (3) | Annual (3) |
|------|------|-------|-------------|--------------|-------------|---|---------------|---------------|--------------------|---------------------|---------------|
| | | | (1) | (1) | (1) | | | | | | |
| 1 | S | 40 | 707 | 271 | 1600 | 1292 | 070 | 1.0 | 980 | 273 | 57 |
| | U | 48 | 1111 | 272 | 1700 | 1592 | 090 | 1.0 | 1170 | 279 | 66 |
| 2 | S | 117 | 824 | 166 | 1700 | 1569 | 015 | 1.0 | 1174 | 314 | 65 |
| | U | 105 | 1069 | 152 | 1600 | 1732 | 340 | 1.0 | 1268 | 300 | 70 |
| 3 | S | 134 | 1690 | 085 | 1600 | 1182 | 275 | 4.0 | 903 | 256 | 53 |
| | U | 16 | 1474 | 093 | 1300 | 1333 | 275 | 1.0 | 989 | 240 | 58 |

Notes: (1) With reference to boilerstack at United Refining Company
 (2) (U) or (S) Unstable or stable, respectively
 (3) Includes background concentrations dependent upon stability category designated in (2)

| Neutral/Stable | | Unstable |
|----------------|----|----------|
| 3-hour | 76 | 56 |
| 24-hour | 79 | 40 |
| Annual | 18 | 18 |

TABLE 8
CTSCREEN
SUMMARY OF CONCENTRATIONS
HILL # 1

HILL # 1

CTSCREEN:URC Srcs Proposed Case - Hill #1 Stable and Unstable

SUMMARY FOR ALL STABLE HOURS

| <---- PEAK SOURCE ---> | | | | | | | | | | | |
|------------------------|---------|------|-----|------|------|-------|-------|----|---------|-------|-------|
| REC | CONC | WD | WS | SIGV | SIGW | DTHDZ | HCRIT | NS | SRC | CTRIB | HPL |
| # | UG/M**3 | DEG | M/S | M/S | M/S | K/M | M | | UG/M**3 | | M |
| 339 | 1309.98 | 74.8 | 1.0 | 0.30 | 0.04 | 0.035 | 149.0 | 12 | 872.79 | | 150.3 |

SUMMARY FOR ALL UNSTABLE HOURS

| <----- PEAK SOURCE -----> | | | | | | | | | | | |
|---------------------------|---------|------|-----|-------|------|-------|----|---------|-------|------|-----|
| REC | CONC | WD | WS | ZI | W* | L | NS | SRC | CTRIB | HPL | PEN |
| # | UG/M**3 | DEG | M/S | M | M/S | M | | UG/M**3 | | M | |
| 365 | 1202.20 | 74.0 | 1.0 | 200.0 | 0.18 | -90.0 | 12 | 1117.48 | 180.0 | 0.10 | |

SUMMARY FOR ALL HOURS

| REC | CONC | 3HR | 24HR | ANNUAL |
|-----|---------|---------|---------|---------|
| # | UG/M**3 | UG/M**3 | UG/M**3 | UG/M**3 |
| 339 | 1309.98 | 916.98 | 196.50 | 39.30 |

RECEPTOR SUMMARY FOR STABLE HOURS

| <---- PEAK SOURCE ---> | | | | | | | | | | | |
|------------------------|---------|------|-----|------|------|-------|-------|----|---------|-------|-------|
| REC | CONC | WD | WS | SIGV | SIGW | DTHDZ | HCRIT | NS | SRC | CTRIB | HPL |
| # | UG/M**3 | DEG | M/S | M/S | M/S | K/M | M | | UG/M**3 | | M |
| 1 | 129.90 | 92.2 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 37.70 | | 150.3 |
| 2 | 128.83 | 90.6 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 38.46 | | 150.3 |
| 3 | 127.62 | 90.6 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 36.79 | | 150.3 |
| 4 | 126.23 | 90.4 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 35.16 | | 150.3 |
| 5 | 124.76 | 89.3 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 34.54 | | 150.3 |
| 6 | 123.33 | 88.4 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 33.51 | | 150.3 |
| 7 | 122.18 | 87.1 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 32.95 | | 150.3 |
| 8 | 121.61 | 86.6 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 31.52 | | 150.3 |
| 9 | 121.19 | 86.6 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 29.78 | | 150.3 |
| 10 | 121.07 | 78.0 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 37.68 | | 150.3 |
| 11 | 122.29 | 78.0 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 36.92 | | 150.3 |
| 12 | 123.17 | 78.0 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 36.37 | | 150.3 |
| 13 | 123.78 | 76.7 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 37.17 | | 150.3 |
| 14 | 133.00 | 90.6 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 41.70 | | 150.3 |
| 15 | 131.92 | 90.6 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 40.13 | | 150.3 |
| 16 | 130.64 | 90.4 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 38.58 | | 150.3 |
| 17 | 129.20 | 89.4 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 37.89 | | 150.3 |
| 18 | 127.71 | 88.5 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 36.85 | | 150.3 |
| 19 | 126.37 | 87.1 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 36.37 | | 150.3 |

| | | | | | | | | | | |
|----|--------|------|-----|------|------|-------|-------|----|-------|-------|
| 20 | 125.55 | 86.6 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 34.70 | 150.3 |
| 21 | 125.12 | 86.6 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 32.65 | 150.3 |
| 22 | 124.68 | 86.6 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 30.85 | 150.3 |
| 23 | 126.02 | 78.0 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 39.61 | 150.3 |
| 24 | 127.00 | 78.0 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 38.95 | 150.3 |
| 25 | 127.78 | 76.7 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 39.64 | 150.3 |
| 26 | 138.05 | 92.2 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 43.86 | 150.3 |
| 27 | 137.38 | 90.6 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 45.20 | 150.3 |
| 28 | 136.57 | 90.6 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 43.89 | 150.3 |
| 29 | 135.53 | 90.4 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 42.58 | 150.3 |
| 30 | 134.29 | 89.4 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 42.25 | 150.3 |
| 31 | 132.91 | 89.3 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 40.45 | 150.3 |
| 32 | 131.28 | 88.4 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 39.23 | 150.3 |
| 33 | 129.97 | 86.9 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 38.64 | 150.3 |
| 34 | 129.16 | 86.6 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 36.55 | 150.3 |
| 35 | 128.76 | 86.6 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 34.37 | 150.3 |
| 36 | 129.54 | 78.0 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 42.85 | 150.3 |
| 37 | 130.94 | 78.0 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 41.93 | 150.3 |
| 38 | 131.91 | 78.0 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 41.20 | 150.3 |
| 39 | 132.93 | 76.7 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 41.87 | 150.3 |
| 40 | 134.25 | 74.8 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 43.34 | 150.3 |
| 41 | 152.15 | 87.8 | 5.0 | 0.30 | 0.30 | 0.035 | 31.7 | 18 | 46.81 | 68.8 |
| 42 | 149.92 | 92.4 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 57.95 | 150.3 |
| 43 | 150.08 | 92.4 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 57.45 | 150.3 |
| 44 | 150.15 | 92.4 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 56.88 | 150.3 |
| 45 | 150.15 | 92.4 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 56.30 | 150.3 |
| 46 | 150.10 | 92.4 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 56.05 | 150.3 |
| 47 | 150.04 | 92.4 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 55.26 | 150.3 |
| 48 | 149.95 | 92.4 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 54.86 | 150.3 |
| 49 | 149.99 | 92.4 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 55.37 | 150.3 |
| 50 | 149.91 | 92.4 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 54.87 | 150.3 |
| 51 | 149.76 | 92.4 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 54.10 | 150.3 |
| 52 | 149.53 | 92.2 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 53.38 | 150.3 |
| 53 | 149.24 | 92.2 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 52.48 | 150.3 |
| 54 | 149.06 | 92.2 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 52.00 | 150.3 |
| 55 | 148.68 | 90.6 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 53.51 | 150.3 |
| 56 | 148.22 | 90.6 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 52.30 | 150.3 |
| 57 | 147.82 | 90.4 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 51.75 | 150.3 |
| 58 | 147.66 | 90.4 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 51.57 | 150.3 |
| 59 | 147.00 | 90.4 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 50.26 | 150.3 |
| 60 | 146.00 | 89.3 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 49.94 | 150.3 |
| 61 | 145.00 | 88.5 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 49.62 | 150.3 |
| 62 | 143.60 | 87.1 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 49.39 | 150.3 |
| 63 | 142.42 | 86.6 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 47.26 | 150.3 |
| 64 | 141.43 | 86.6 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 44.40 | 150.3 |
| 65 | 140.90 | 86.6 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 41.79 | 150.3 |
| 66 | 141.70 | 74.8 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 53.20 | 150.3 |
| 67 | 144.13 | 78.0 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 50.07 | 150.3 |
| 68 | 145.14 | 78.0 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 49.11 | 150.3 |
| 69 | 146.07 | 76.7 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 49.65 | 150.3 |
| 70 | 147.20 | 74.8 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 50.97 | 150.3 |
| 71 | 148.55 | 73.0 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 52.14 | 150.3 |
| 72 | 149.88 | 70.5 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 53.74 | 150.3 |
| 73 | 151.15 | 70.5 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 53.69 | 150.3 |
| 74 | 152.02 | 70.5 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 53.62 | 150.3 |
| 75 | 152.49 | 70.5 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 53.53 | 150.3 |
| 76 | 152.77 | 70.5 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 53.40 | 150.3 |
| 77 | 159.93 | 92.4 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 64.64 | 150.3 |
| 78 | 160.44 | 92.4 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 64.33 | 150.3 |
| 79 | 160.95 | 92.4 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 63.94 | 150.3 |

| | | | | | | | | | | |
|-----|--------|-------|-----|------|------|-------|-------|----|--------|-------|
| 80 | 161.36 | 92.4 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 63.50 | 150.3 |
| 81 | 161.64 | 92.4 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 63.09 | 150.3 |
| 82 | 161.94 | 92.2 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 62.72 | 150.3 |
| 83 | 162.20 | 92.2 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 61.97 | 150.3 |
| 84 | 162.39 | 90.6 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 63.91 | 150.3 |
| 85 | 162.60 | 90.6 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 62.96 | 150.3 |
| 86 | 162.61 | 90.4 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 62.18 | 150.3 |
| 87 | 162.45 | 89.4 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 62.48 | 150.3 |
| 88 | 162.03 | 88.5 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 62.20 | 150.3 |
| 89 | 161.34 | 88.4 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 60.25 | 150.3 |
| 90 | 160.47 | 86.9 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 60.09 | 150.3 |
| 91 | 159.72 | 86.6 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 57.64 | 150.3 |
| 92 | 158.71 | 86.6 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 54.44 | 150.3 |
| 93 | 158.32 | 86.6 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 51.54 | 150.3 |
| 94 | 160.42 | 74.8 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 64.66 | 150.3 |
| 95 | 163.07 | 78.0 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 61.41 | 150.3 |
| 96 | 163.93 | 78.0 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 60.25 | 150.3 |
| 97 | 164.59 | 76.7 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 60.67 | 150.3 |
| 98 | 165.35 | 74.8 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 61.74 | 150.3 |
| 99 | 166.02 | 73.0 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 62.54 | 150.3 |
| 100 | 166.65 | 73.0 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 61.97 | 150.3 |
| 101 | 167.05 | 71.8 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 62.36 | 150.3 |
| 102 | 167.28 | 70.5 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 62.80 | 150.3 |
| 103 | 167.24 | 70.5 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 62.30 | 150.3 |
| 104 | 166.79 | 70.5 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 61.66 | 150.3 |
| 105 | 172.26 | 92.4 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 72.03 | 150.3 |
| 106 | 173.27 | 92.4 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 71.92 | 150.3 |
| 107 | 173.96 | 92.4 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 71.79 | 150.3 |
| 108 | 174.85 | 92.2 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 71.78 | 150.3 |
| 109 | 175.78 | 92.2 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 71.48 | 150.3 |
| 110 | 176.99 | 90.6 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 73.99 | 150.3 |
| 111 | 178.21 | 90.4 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 73.79 | 150.3 |
| 112 | 179.29 | 89.4 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 74.84 | 150.3 |
| 113 | 180.24 | 89.3 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 73.97 | 150.3 |
| 114 | 180.96 | 88.4 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 74.06 | 150.3 |
| 115 | 181.28 | 86.9 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 74.45 | 150.3 |
| 116 | 181.03 | 86.6 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 71.79 | 150.3 |
| 117 | 180.54 | 86.6 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 68.32 | 150.3 |
| 118 | 180.37 | 86.6 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 65.22 | 150.3 |
| 119 | 182.46 | 78.0 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 77.71 | 150.3 |
| 120 | 187.37 | 78.0 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 76.19 | 150.3 |
| 121 | 187.23 | 78.0 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 74.68 | 150.3 |
| 122 | 187.59 | 76.7 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 74.78 | 150.3 |
| 123 | 187.80 | 76.7 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 73.40 | 150.3 |
| 124 | 187.92 | 74.8 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 74.34 | 150.3 |
| 125 | 187.72 | 74.8 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 73.21 | 150.3 |
| 126 | 187.38 | 73.0 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 73.94 | 150.3 |
| 127 | 186.71 | 73.0 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 72.87 | 150.3 |
| 128 | 185.52 | 71.8 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 72.43 | 150.3 |
| 129 | 183.82 | 71.8 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 70.96 | 150.3 |
| 130 | 181.78 | 70.5 | 1.0 | 0.75 | 0.75 | 0.035 | 149.0 | 12 | 70.35 | 150.3 |
| 131 | 405.90 | 75.3 | 4.0 | 0.30 | 0.30 | 0.035 | 61.0 | 12 | 361.47 | 111.6 |
| 132 | 400.80 | 77.1 | 4.0 | 0.30 | 0.30 | 0.035 | 61.0 | 12 | 358.72 | 111.6 |
| 133 | 430.09 | 91.8 | 4.0 | 0.30 | 0.30 | 0.035 | 61.0 | 8 | 133.65 | 127.1 |
| 134 | 388.12 | 96.2 | 4.0 | 0.30 | 0.30 | 0.035 | 61.0 | 8 | 122.74 | 127.1 |
| 135 | 377.81 | 96.2 | 4.0 | 0.30 | 0.30 | 0.035 | 61.0 | 8 | 107.51 | 127.1 |
| 136 | 350.37 | 96.2 | 4.0 | 0.30 | 0.30 | 0.035 | 61.0 | 8 | 90.19 | 127.1 |
| 137 | 333.34 | 102.4 | 4.0 | 0.30 | 0.30 | 0.035 | 61.0 | 7 | 109.02 | 104.1 |
| 138 | 378.47 | 102.4 | 4.0 | 0.30 | 0.30 | 0.035 | 61.0 | 7 | 114.79 | 104.1 |
| 139 | 396.83 | 102.4 | 4.0 | 0.30 | 0.30 | 0.035 | 61.0 | 7 | 119.23 | 104.1 |

| | | | | | | | | | | |
|-----|--------|-------|-----|------|------|-------|------|----|--------|-------|
| 140 | 410.66 | 83.8 | 4.0 | 0.30 | 0.30 | 0.035 | 61.0 | 12 | 382.15 | 111.6 |
| 141 | 469.14 | 83.8 | 4.0 | 0.30 | 0.30 | 0.035 | 61.0 | 12 | 426.00 | 111.6 |
| 142 | 478.23 | 83.8 | 4.0 | 0.30 | 0.30 | 0.035 | 61.0 | 12 | 432.25 | 111.6 |
| 143 | 472.76 | 83.8 | 4.0 | 0.30 | 0.30 | 0.035 | 61.0 | 12 | 422.63 | 111.6 |
| 144 | 456.43 | 103.2 | 4.0 | 0.30 | 0.30 | 0.035 | 61.0 | 8 | 127.81 | 127.1 |
| 145 | 423.10 | 102.4 | 4.0 | 0.30 | 0.30 | 0.035 | 61.0 | 7 | 131.94 | 104.1 |
| 146 | 410.44 | 96.2 | 4.0 | 0.30 | 0.30 | 0.035 | 61.0 | 8 | 103.55 | 127.1 |
| 147 | 299.10 | 93.4 | 4.0 | 0.30 | 0.30 | 0.035 | 61.0 | 18 | 74.13 | 71.8 |
| 148 | 293.76 | 87.0 | 3.0 | 0.30 | 0.30 | 0.035 | 90.3 | 18 | 101.05 | 75.9 |
| 149 | 327.51 | 77.1 | 4.0 | 0.30 | 0.15 | 0.035 | 61.0 | 18 | 167.40 | 71.8 |
| 150 | 373.30 | 75.3 | 4.0 | 0.30 | 0.30 | 0.035 | 61.0 | 18 | 106.26 | 71.8 |
| 151 | 359.59 | 75.3 | 4.0 | 0.30 | 0.30 | 0.035 | 61.0 | 8 | 98.09 | 127.1 |
| 152 | 367.35 | 75.3 | 4.0 | 0.30 | 0.30 | 0.035 | 61.0 | 8 | 106.21 | 127.1 |
| 153 | 303.10 | 75.3 | 4.0 | 0.30 | 0.30 | 0.035 | 61.0 | 7 | 127.06 | 104.1 |
| 154 | 286.30 | 87.0 | 3.0 | 0.30 | 0.30 | 0.035 | 90.3 | 18 | 93.61 | 75.9 |
| 155 | 276.59 | 87.0 | 3.0 | 0.30 | 0.30 | 0.035 | 90.3 | 18 | 85.94 | 75.9 |
| 156 | 302.27 | 75.3 | 4.0 | 0.30 | 0.30 | 0.035 | 61.0 | 7 | 117.54 | 104.1 |
| 157 | 307.90 | 65.0 | 4.0 | 0.30 | 0.30 | 0.035 | 61.0 | 8 | 110.54 | 127.1 |
| 158 | 351.18 | 65.0 | 4.0 | 0.30 | 0.30 | 0.035 | 61.0 | 8 | 128.35 | 127.1 |
| 159 | 347.30 | 64.8 | 4.0 | 0.30 | 0.30 | 0.035 | 61.0 | 8 | 123.60 | 127.1 |
| 160 | 427.00 | 83.8 | 4.0 | 0.30 | 0.30 | 0.035 | 61.0 | 8 | 151.46 | 127.1 |
| 161 | 378.59 | 83.8 | 4.0 | 0.30 | 0.30 | 0.035 | 61.0 | 8 | 122.78 | 127.1 |
| 162 | 421.19 | 75.3 | 4.0 | 0.30 | 0.30 | 0.035 | 61.0 | 12 | 370.82 | 111.6 |
| 163 | 415.56 | 77.1 | 4.0 | 0.30 | 0.30 | 0.035 | 61.0 | 12 | 363.00 | 111.6 |
| 164 | 424.55 | 91.8 | 4.0 | 0.30 | 0.30 | 0.035 | 61.0 | 8 | 136.36 | 127.1 |
| 165 | 393.13 | 96.2 | 4.0 | 0.30 | 0.30 | 0.035 | 61.0 | 8 | 124.79 | 127.1 |
| 166 | 387.17 | 96.2 | 4.0 | 0.30 | 0.30 | 0.035 | 61.0 | 8 | 115.50 | 127.1 |
| 167 | 387.05 | 89.4 | 3.0 | 0.30 | 0.08 | 0.035 | 90.3 | 18 | 121.35 | 75.9 |
| 168 | 393.43 | 89.4 | 3.0 | 0.30 | 0.08 | 0.035 | 90.3 | 18 | 124.29 | 75.9 |
| 169 | 400.74 | 88.8 | 3.0 | 0.30 | 0.08 | 0.035 | 90.3 | 18 | 124.79 | 75.9 |
| 170 | 460.16 | 83.8 | 4.0 | 0.30 | 0.30 | 0.035 | 61.0 | 12 | 412.82 | 111.6 |
| 171 | 472.88 | 83.8 | 4.0 | 0.30 | 0.30 | 0.035 | 61.0 | 12 | 420.80 | 111.6 |
| 172 | 473.12 | 83.8 | 4.0 | 0.30 | 0.30 | 0.035 | 61.0 | 12 | 416.39 | 111.6 |
| 173 | 461.77 | 81.8 | 4.0 | 0.30 | 0.30 | 0.035 | 61.0 | 12 | 421.63 | 111.6 |
| 174 | 455.43 | 88.8 | 3.0 | 0.30 | 0.08 | 0.035 | 90.3 | 18 | 153.36 | 75.9 |
| 175 | 475.10 | 87.8 | 3.0 | 0.30 | 0.08 | 0.035 | 90.3 | 18 | 155.33 | 75.9 |
| 176 | 487.23 | 87.8 | 3.0 | 0.30 | 0.08 | 0.035 | 90.3 | 18 | 165.36 | 75.9 |
| 177 | 485.87 | 87.8 | 3.0 | 0.30 | 0.08 | 0.035 | 90.3 | 18 | 167.04 | 75.9 |
| 178 | 483.05 | 87.0 | 3.0 | 0.30 | 0.08 | 0.035 | 90.3 | 18 | 160.08 | 75.9 |
| 179 | 485.84 | 87.0 | 3.0 | 0.30 | 0.08 | 0.035 | 90.3 | 18 | 162.24 | 75.9 |
| 180 | 485.56 | 87.0 | 3.0 | 0.30 | 0.08 | 0.035 | 90.3 | 18 | 162.87 | 75.9 |
| 181 | 483.22 | 87.0 | 3.0 | 0.30 | 0.08 | 0.035 | 90.3 | 18 | 162.38 | 75.9 |
| 182 | 478.88 | 87.0 | 3.0 | 0.30 | 0.08 | 0.035 | 90.3 | 18 | 160.27 | 75.9 |
| 183 | 471.58 | 87.0 | 3.0 | 0.30 | 0.08 | 0.035 | 90.3 | 18 | 157.26 | 75.9 |
| 184 | 462.09 | 87.0 | 3.0 | 0.30 | 0.08 | 0.035 | 90.3 | 18 | 152.38 | 75.9 |
| 185 | 445.70 | 87.0 | 3.0 | 0.30 | 0.08 | 0.035 | 90.3 | 18 | 143.78 | 75.9 |
| 186 | 422.19 | 87.0 | 3.0 | 0.30 | 0.08 | 0.035 | 90.3 | 18 | 134.76 | 75.9 |
| 187 | 427.62 | 87.0 | 3.0 | 0.30 | 0.08 | 0.035 | 90.3 | 18 | 136.42 | 75.9 |
| 188 | 436.51 | 87.0 | 3.0 | 0.30 | 0.08 | 0.035 | 90.3 | 18 | 140.24 | 75.9 |
| 189 | 432.81 | 87.0 | 3.0 | 0.30 | 0.08 | 0.035 | 90.3 | 18 | 139.59 | 75.9 |
| 190 | 421.87 | 87.0 | 3.0 | 0.30 | 0.08 | 0.035 | 90.3 | 18 | 135.01 | 75.9 |
| 191 | 702.15 | 79.4 | 3.0 | 0.30 | 0.08 | 0.035 | 90.3 | 12 | 213.89 | 118.2 |
| 192 | 709.56 | 82.5 | 3.0 | 0.30 | 0.08 | 0.035 | 90.3 | 8 | 226.43 | 135.3 |
| 193 | 720.19 | 87.0 | 3.0 | 0.30 | 0.08 | 0.035 | 90.3 | 8 | 265.23 | 135.3 |
| 194 | 783.00 | 87.8 | 3.0 | 0.30 | 0.15 | 0.035 | 90.3 | 8 | 276.36 | 135.3 |
| 195 | 818.11 | 89.4 | 3.0 | 0.30 | 0.15 | 0.035 | 90.3 | 8 | 270.19 | 135.3 |
| 196 | 776.01 | 89.4 | 3.0 | 0.30 | 0.15 | 0.035 | 90.3 | 8 | 199.06 | 135.3 |
| 197 | 741.43 | 89.4 | 3.0 | 0.30 | 0.15 | 0.035 | 90.3 | 12 | 325.59 | 118.2 |
| 198 | 745.08 | 89.4 | 3.0 | 0.30 | 0.15 | 0.035 | 90.3 | 12 | 398.34 | 118.2 |
| 199 | 748.87 | 89.4 | 3.0 | 0.30 | 0.15 | 0.035 | 90.3 | 12 | 376.89 | 118.2 |

| | | | | | | | | | | |
|-----|---------|------|-----|------|------|-------|-------|----|---------|-------|
| 200 | 735.29 | 89.4 | 3.0 | 0.30 | 0.15 | 0.035 | 90.3 | 12 | 304.54 | 118.2 |
| 201 | 752.07 | 79.4 | 3.0 | 0.30 | 0.08 | 0.035 | 90.3 | 12 | 686.79 | 118.2 |
| 202 | 782.82 | 79.4 | 3.0 | 0.30 | 0.15 | 0.035 | 90.3 | 12 | 713.20 | 118.2 |
| 203 | 888.27 | 79.4 | 3.0 | 0.30 | 0.15 | 0.035 | 90.3 | 12 | 808.95 | 118.2 |
| 204 | 987.08 | 79.4 | 3.0 | 0.30 | 0.15 | 0.035 | 90.3 | 12 | 898.44 | 118.2 |
| 205 | 1074.68 | 79.4 | 3.0 | 0.30 | 0.15 | 0.035 | 90.3 | 12 | 980.71 | 118.2 |
| 206 | 1217.88 | 76.3 | 3.0 | 0.30 | 0.15 | 0.035 | 90.3 | 12 | 1102.34 | 118.2 |
| 207 | 930.16 | 65.8 | 3.0 | 0.30 | 0.08 | 0.035 | 90.3 | 12 | 873.50 | 118.2 |
| 208 | 1068.50 | 64.3 | 3.0 | 0.30 | 0.08 | 0.035 | 90.3 | 12 | 900.33 | 118.2 |
| 209 | 780.68 | 89.4 | 3.0 | 0.30 | 0.08 | 0.035 | 90.3 | 8 | 269.53 | 135.3 |
| 210 | 624.48 | 87.0 | 3.0 | 0.30 | 0.08 | 0.035 | 90.3 | 7 | 291.03 | 110.0 |
| 211 | 807.28 | 76.3 | 3.0 | 0.30 | 0.30 | 0.035 | 90.3 | 8 | 270.41 | 135.3 |
| 212 | 810.65 | 76.3 | 3.0 | 0.30 | 0.30 | 0.035 | 90.3 | 8 | 278.02 | 135.3 |
| 213 | 770.24 | 76.3 | 3.0 | 0.30 | 0.30 | 0.035 | 90.3 | 8 | 248.20 | 135.3 |
| 214 | 762.59 | 76.3 | 3.0 | 0.30 | 0.15 | 0.035 | 90.3 | 8 | 275.57 | 135.3 |
| 215 | 648.74 | 76.3 | 3.0 | 0.30 | 0.15 | 0.035 | 90.3 | 8 | 215.96 | 135.3 |
| 216 | 682.67 | 76.3 | 3.0 | 0.30 | 0.15 | 0.035 | 90.3 | 8 | 241.77 | 135.3 |
| 217 | 702.46 | 76.3 | 3.0 | 0.30 | 0.15 | 0.035 | 90.3 | 8 | 249.58 | 135.3 |
| 218 | 684.45 | 76.3 | 3.0 | 0.30 | 0.15 | 0.035 | 90.3 | 8 | 241.79 | 135.3 |
| 219 | 585.65 | 76.3 | 3.0 | 0.30 | 0.15 | 0.035 | 90.3 | 8 | 201.77 | 135.3 |
| 220 | 570.24 | 65.8 | 3.0 | 0.30 | 0.08 | 0.035 | 90.3 | 8 | 224.75 | 135.3 |
| 221 | 593.21 | 65.8 | 3.0 | 0.30 | 0.08 | 0.035 | 90.3 | 8 | 241.90 | 135.3 |
| 222 | 576.86 | 65.8 | 3.0 | 0.30 | 0.08 | 0.035 | 90.3 | 8 | 231.80 | 135.3 |
| 223 | 564.86 | 65.8 | 3.0 | 0.30 | 0.08 | 0.035 | 90.3 | 8 | 222.13 | 135.3 |
| 224 | 549.61 | 65.8 | 3.0 | 0.30 | 0.08 | 0.035 | 90.3 | 8 | 206.53 | 135.3 |
| 225 | 625.17 | 79.4 | 3.0 | 0.30 | 0.15 | 0.035 | 90.3 | 1 | 201.44 | 146.4 |
| 226 | 650.07 | 82.5 | 3.0 | 0.30 | 0.08 | 0.035 | 90.3 | 8 | 250.76 | 135.3 |
| 227 | 664.90 | 82.8 | 3.0 | 0.30 | 0.08 | 0.035 | 90.3 | 8 | 242.87 | 135.3 |
| 228 | 638.45 | 83.3 | 2.0 | 0.30 | 0.15 | 0.020 | 100.9 | 12 | 185.30 | 145.7 |
| 229 | 683.60 | 87.0 | 3.0 | 0.30 | 0.15 | 0.035 | 90.3 | 8 | 256.24 | 135.3 |
| 230 | 685.36 | 89.4 | 3.0 | 0.30 | 0.30 | 0.035 | 90.3 | 8 | 231.68 | 135.3 |
| 231 | 686.91 | 89.1 | 2.0 | 0.30 | 0.15 | 0.020 | 100.9 | 12 | 231.51 | 145.7 |
| 232 | 696.47 | 90.8 | 2.0 | 0.30 | 0.15 | 0.020 | 100.9 | 12 | 251.50 | 145.7 |
| 233 | 707.30 | 90.8 | 2.0 | 0.30 | 0.15 | 0.020 | 100.9 | 12 | 254.31 | 145.7 |
| 234 | 707.68 | 90.8 | 2.0 | 0.30 | 0.15 | 0.020 | 100.9 | 12 | 216.10 | 145.7 |
| 235 | 732.33 | 79.4 | 3.0 | 0.30 | 0.08 | 0.035 | 90.3 | 12 | 677.93 | 118.2 |
| 236 | 791.51 | 79.4 | 3.0 | 0.30 | 0.08 | 0.035 | 90.3 | 12 | 734.94 | 118.2 |
| 237 | 878.22 | 79.4 | 3.0 | 0.30 | 0.08 | 0.035 | 90.3 | 12 | 812.96 | 118.2 |
| 238 | 966.84 | 79.4 | 3.0 | 0.30 | 0.08 | 0.035 | 90.3 | 12 | 891.07 | 118.2 |
| 239 | 1059.98 | 79.3 | 3.0 | 0.30 | 0.08 | 0.035 | 90.3 | 12 | 962.75 | 118.2 |
| 240 | 1052.63 | 76.3 | 3.0 | 0.30 | 0.08 | 0.035 | 90.3 | 12 | 923.67 | 118.2 |
| 241 | 1176.57 | 65.8 | 3.0 | 0.30 | 0.08 | 0.035 | 90.3 | 12 | 1055.34 | 118.2 |
| 242 | 806.04 | 91.8 | 3.0 | 0.30 | 0.08 | 0.035 | 90.3 | 8 | 311.23 | 135.3 |
| 243 | 746.45 | 87.0 | 3.0 | 0.30 | 0.08 | 0.035 | 90.3 | 8 | 258.08 | 135.3 |
| 244 | 709.35 | 82.5 | 3.0 | 0.30 | 0.08 | 0.035 | 90.3 | 8 | 276.94 | 135.3 |
| 245 | 685.37 | 79.4 | 3.0 | 0.30 | 0.15 | 0.035 | 90.3 | 8 | 287.51 | 135.3 |
| 246 | 687.59 | 82.5 | 3.0 | 0.30 | 0.08 | 0.035 | 90.3 | 8 | 285.01 | 135.3 |
| 247 | 664.12 | 79.4 | 3.0 | 0.30 | 0.08 | 0.035 | 90.3 | 8 | 278.75 | 135.3 |
| 248 | 636.00 | 76.3 | 3.0 | 0.30 | 0.08 | 0.035 | 90.3 | 8 | 271.96 | 135.3 |
| 249 | 619.08 | 76.3 | 3.0 | 0.30 | 0.08 | 0.035 | 90.3 | 8 | 263.49 | 135.3 |
| 250 | 607.82 | 79.3 | 3.0 | 0.30 | 0.08 | 0.035 | 90.3 | 8 | 255.17 | 135.3 |
| 251 | 695.32 | 64.3 | 3.0 | 0.30 | 0.08 | 0.035 | 90.3 | 12 | 621.96 | 118.2 |
| 252 | 633.34 | 64.3 | 3.0 | 0.30 | 0.08 | 0.035 | 90.3 | 12 | 538.95 | 118.2 |
| 253 | 592.85 | 71.8 | 1.0 | 0.30 | 0.30 | 0.035 | 149.0 | 12 | 309.53 | 150.3 |
| 254 | 589.60 | 71.8 | 1.0 | 0.30 | 0.30 | 0.035 | 149.0 | 12 | 303.14 | 150.3 |
| 255 | 583.82 | 71.8 | 1.0 | 0.30 | 0.30 | 0.035 | 149.0 | 12 | 292.71 | 150.3 |
| 256 | 576.03 | 70.5 | 1.0 | 0.30 | 0.30 | 0.035 | 149.0 | 12 | 299.11 | 150.3 |
| 257 | 566.80 | 70.5 | 1.0 | 0.30 | 0.30 | 0.035 | 149.0 | 12 | 286.87 | 150.3 |
| 258 | 555.40 | 70.5 | 1.0 | 0.30 | 0.30 | 0.035 | 149.0 | 12 | 274.10 | 150.3 |
| 259 | 541.11 | 70.5 | 1.0 | 0.30 | 0.30 | 0.035 | 149.0 | 12 | 260.63 | 150.3 |

| | | | | | | | | | | |
|-----|---------|------|-----|------|------|-------|-------|----|---------|-------|
| 260 | 667.45 | 86.6 | 1.0 | 0.30 | 0.04 | 0.035 | 149.0 | 12 | 256.99 | 150.3 |
| 261 | 671.67 | 78.0 | 1.0 | 0.30 | 0.04 | 0.035 | 149.0 | 12 | 472.05 | 150.3 |
| 262 | 678.02 | 78.0 | 1.0 | 0.30 | 0.04 | 0.035 | 149.0 | 12 | 474.69 | 150.3 |
| 263 | 685.80 | 78.0 | 1.0 | 0.30 | 0.04 | 0.035 | 149.0 | 12 | 477.87 | 150.3 |
| 264 | 694.77 | 78.0 | 1.0 | 0.30 | 0.04 | 0.035 | 149.0 | 12 | 481.31 | 150.3 |
| 265 | 705.35 | 78.0 | 1.0 | 0.30 | 0.04 | 0.035 | 149.0 | 12 | 484.69 | 150.3 |
| 266 | 721.40 | 77.0 | 2.0 | 0.30 | 0.04 | 0.035 | 119.7 | 12 | 618.19 | 128.7 |
| 267 | 741.25 | 77.0 | 2.0 | 0.30 | 0.04 | 0.035 | 119.7 | 12 | 633.18 | 128.7 |
| 268 | 762.80 | 77.0 | 2.0 | 0.30 | 0.04 | 0.035 | 119.7 | 12 | 648.98 | 128.7 |
| 269 | 786.63 | 77.0 | 2.0 | 0.30 | 0.04 | 0.035 | 119.7 | 12 | 665.91 | 128.7 |
| 270 | 821.51 | 76.2 | 2.0 | 0.30 | 0.04 | 0.035 | 119.7 | 12 | 708.91 | 128.7 |
| 271 | 882.33 | 75.3 | 2.0 | 0.30 | 0.04 | 0.035 | 119.7 | 12 | 773.98 | 128.7 |
| 272 | 950.72 | 74.8 | 2.0 | 0.30 | 0.04 | 0.035 | 119.7 | 12 | 833.56 | 128.7 |
| 273 | 968.03 | 74.8 | 2.0 | 0.30 | 0.04 | 0.035 | 119.7 | 12 | 822.65 | 128.7 |
| 274 | 1026.88 | 77.4 | 3.0 | 0.30 | 0.08 | 0.035 | 90.3 | 12 | 940.37 | 118.2 |
| 275 | 1078.43 | 76.3 | 3.0 | 0.30 | 0.08 | 0.035 | 90.3 | 12 | 960.94 | 118.2 |
| 276 | 1110.69 | 65.8 | 3.0 | 0.30 | 0.08 | 0.035 | 90.3 | 12 | 1018.39 | 118.2 |
| 277 | 935.61 | 74.8 | 2.0 | 0.30 | 0.04 | 0.035 | 119.7 | 12 | 743.90 | 128.7 |
| 278 | 916.29 | 74.8 | 2.0 | 0.30 | 0.04 | 0.035 | 119.7 | 12 | 717.45 | 128.7 |
| 279 | 906.79 | 74.8 | 2.0 | 0.30 | 0.04 | 0.035 | 119.7 | 12 | 704.78 | 128.7 |
| 280 | 903.82 | 74.8 | 2.0 | 0.30 | 0.04 | 0.035 | 119.7 | 12 | 700.89 | 128.7 |
| 281 | 892.96 | 74.8 | 2.0 | 0.30 | 0.04 | 0.035 | 119.7 | 12 | 686.64 | 128.7 |
| 282 | 853.79 | 74.8 | 2.0 | 0.30 | 0.04 | 0.035 | 119.7 | 12 | 638.25 | 128.7 |
| 283 | 819.23 | 71.8 | 1.0 | 0.30 | 0.04 | 0.035 | 149.0 | 12 | 471.58 | 150.3 |
| 284 | 821.35 | 71.8 | 1.0 | 0.30 | 0.04 | 0.035 | 149.0 | 12 | 461.57 | 150.3 |
| 285 | 825.46 | 71.8 | 1.0 | 0.30 | 0.04 | 0.035 | 149.0 | 12 | 449.26 | 150.3 |
| 286 | 811.17 | 70.5 | 1.0 | 0.30 | 0.04 | 0.035 | 149.0 | 12 | 442.26 | 150.3 |
| 287 | 810.75 | 70.5 | 1.0 | 0.30 | 0.04 | 0.035 | 149.0 | 12 | 442.48 | 150.3 |
| 288 | 804.21 | 70.5 | 1.0 | 0.30 | 0.04 | 0.035 | 149.0 | 12 | 437.05 | 150.3 |
| 289 | 799.79 | 70.5 | 1.0 | 0.30 | 0.04 | 0.035 | 149.0 | 12 | 428.39 | 150.3 |
| 290 | 792.71 | 70.5 | 1.0 | 0.30 | 0.04 | 0.035 | 149.0 | 12 | 413.34 | 150.3 |
| 291 | 784.41 | 70.5 | 1.0 | 0.30 | 0.04 | 0.035 | 149.0 | 12 | 398.39 | 150.3 |
| 292 | 775.26 | 70.5 | 1.0 | 0.30 | 0.04 | 0.035 | 149.0 | 12 | 384.13 | 150.3 |
| 293 | 925.90 | 78.0 | 1.0 | 0.30 | 0.04 | 0.035 | 149.0 | 12 | 672.26 | 150.3 |
| 294 | 931.86 | 78.0 | 1.0 | 0.30 | 0.04 | 0.035 | 149.0 | 12 | 675.01 | 150.3 |
| 295 | 940.50 | 78.0 | 1.0 | 0.30 | 0.04 | 0.035 | 149.0 | 12 | 679.23 | 150.3 |
| 296 | 951.01 | 78.0 | 1.0 | 0.30 | 0.04 | 0.035 | 149.0 | 12 | 684.20 | 150.3 |
| 297 | 962.96 | 78.0 | 1.0 | 0.30 | 0.04 | 0.035 | 149.0 | 12 | 689.35 | 150.3 |
| 298 | 975.73 | 78.0 | 1.0 | 0.30 | 0.04 | 0.035 | 149.0 | 12 | 694.24 | 150.3 |
| 299 | 989.09 | 78.0 | 1.0 | 0.30 | 0.04 | 0.035 | 149.0 | 12 | 698.39 | 150.3 |
| 300 | 1002.69 | 78.0 | 1.0 | 0.30 | 0.04 | 0.035 | 149.0 | 12 | 701.24 | 150.3 |
| 301 | 1013.57 | 78.0 | 1.0 | 0.30 | 0.04 | 0.035 | 149.0 | 12 | 702.11 | 150.3 |
| 302 | 1026.94 | 78.0 | 1.0 | 0.30 | 0.04 | 0.035 | 149.0 | 12 | 701.29 | 150.3 |
| 303 | 1041.33 | 76.7 | 1.0 | 0.30 | 0.04 | 0.035 | 149.0 | 12 | 730.83 | 150.3 |
| 304 | 1113.95 | 76.7 | 1.0 | 0.30 | 0.04 | 0.035 | 149.0 | 12 | 706.82 | 150.3 |
| 305 | 1081.43 | 74.8 | 1.0 | 0.30 | 0.04 | 0.035 | 149.0 | 12 | 715.17 | 150.3 |
| 306 | 1093.83 | 74.8 | 1.0 | 0.30 | 0.04 | 0.035 | 149.0 | 12 | 710.77 | 150.3 |
| 307 | 1089.55 | 73.0 | 1.0 | 0.30 | 0.04 | 0.035 | 149.0 | 12 | 753.34 | 150.3 |
| 308 | 1096.41 | 64.2 | 2.0 | 0.30 | 0.04 | 0.035 | 119.7 | 12 | 959.66 | 128.7 |
| 309 | 1092.33 | 73.0 | 1.0 | 0.30 | 0.04 | 0.035 | 149.0 | 12 | 725.29 | 150.3 |
| 310 | 1094.19 | 73.0 | 1.0 | 0.30 | 0.04 | 0.035 | 149.0 | 12 | 723.89 | 150.3 |
| 311 | 1096.93 | 73.0 | 1.0 | 0.30 | 0.04 | 0.035 | 149.0 | 12 | 713.90 | 150.3 |
| 312 | 1094.55 | 71.8 | 1.0 | 0.30 | 0.04 | 0.035 | 149.0 | 12 | 719.16 | 150.3 |
| 313 | 1087.88 | 71.8 | 1.0 | 0.30 | 0.04 | 0.035 | 149.0 | 12 | 690.29 | 150.3 |
| 314 | 1086.67 | 71.8 | 1.0 | 0.30 | 0.04 | 0.035 | 149.0 | 12 | 672.71 | 150.3 |
| 315 | 1076.73 | 70.5 | 1.0 | 0.30 | 0.04 | 0.035 | 149.0 | 12 | 664.82 | 150.3 |
| 316 | 1051.74 | 70.5 | 1.0 | 0.30 | 0.04 | 0.035 | 149.0 | 12 | 614.19 | 150.3 |
| 317 | 1039.12 | 70.5 | 1.0 | 0.30 | 0.04 | 0.035 | 149.0 | 12 | 591.60 | 150.3 |
| 318 | 1058.49 | 70.5 | 1.0 | 0.30 | 0.04 | 0.035 | 149.0 | 12 | 622.07 | 150.3 |
| 319 | 1050.38 | 70.5 | 1.0 | 0.30 | 0.04 | 0.035 | 149.0 | 12 | 615.20 | 150.3 |

| | | | | | | | | | | |
|-----|---------|------|-----|------|------|-------|-------|----|--------|-------|
| 320 | 1042.06 | 70.5 | 1.0 | 0.30 | 0.04 | 0.035 | 149.0 | 12 | 599.91 | 150.3 |
| 321 | 1029.07 | 70.5 | 1.0 | 0.30 | 0.04 | 0.035 | 149.0 | 12 | 576.86 | 150.3 |
| 322 | 1015.12 | 70.5 | 1.0 | 0.30 | 0.04 | 0.035 | 149.0 | 12 | 555.16 | 150.3 |
| 323 | 998.94 | 70.5 | 1.0 | 0.30 | 0.04 | 0.035 | 149.0 | 12 | 533.53 | 150.3 |
| 324 | 976.35 | 70.5 | 1.0 | 0.30 | 0.04 | 0.035 | 149.0 | 12 | 508.07 | 150.3 |
| 325 | 858.93 | 78.0 | 1.0 | 0.30 | 0.04 | 0.035 | 149.0 | 12 | 233.79 | 150.3 |
| 326 | 1110.19 | 78.0 | 1.0 | 0.30 | 0.04 | 0.035 | 149.0 | 12 | 809.33 | 150.3 |
| 327 | 1115.69 | 78.0 | 1.0 | 0.30 | 0.04 | 0.035 | 149.0 | 12 | 812.18 | 150.3 |
| 328 | 1125.16 | 78.0 | 1.0 | 0.30 | 0.04 | 0.035 | 149.0 | 12 | 817.15 | 150.3 |
| 329 | 1138.65 | 78.0 | 1.0 | 0.30 | 0.04 | 0.035 | 149.0 | 12 | 823.60 | 150.3 |
| 330 | 1154.11 | 78.0 | 1.0 | 0.30 | 0.04 | 0.035 | 149.0 | 12 | 830.98 | 150.3 |
| 331 | 1170.81 | 78.0 | 1.0 | 0.30 | 0.04 | 0.035 | 149.0 | 12 | 838.34 | 150.3 |
| 332 | 1188.07 | 78.0 | 1.0 | 0.30 | 0.04 | 0.035 | 149.0 | 12 | 845.01 | 150.3 |
| 333 | 1205.26 | 78.0 | 1.0 | 0.30 | 0.04 | 0.035 | 149.0 | 12 | 850.29 | 150.3 |
| 334 | 1218.44 | 78.0 | 1.0 | 0.30 | 0.04 | 0.035 | 149.0 | 12 | 852.96 | 150.3 |
| 335 | 1231.24 | 78.0 | 1.0 | 0.30 | 0.04 | 0.035 | 149.0 | 12 | 853.89 | 150.3 |
| 336 | 1246.70 | 78.0 | 1.0 | 0.30 | 0.04 | 0.035 | 149.0 | 12 | 852.25 | 150.3 |
| 337 | 1268.32 | 76.7 | 1.0 | 0.30 | 0.04 | 0.035 | 149.0 | 12 | 887.10 | 150.3 |
| 338 | 1298.16 | 73.0 | 1.0 | 0.30 | 0.04 | 0.035 | 149.0 | 12 | 946.92 | 150.3 |
| 339 | 1309.98 | 74.8 | 1.0 | 0.30 | 0.04 | 0.035 | 149.0 | 12 | 872.79 | 150.3 |
| 340 | 1306.93 | 74.8 | 1.0 | 0.30 | 0.04 | 0.035 | 149.0 | 12 | 859.18 | 150.3 |
| 341 | 1307.91 | 73.0 | 1.0 | 0.30 | 0.04 | 0.035 | 149.0 | 12 | 910.70 | 150.3 |
| 342 | 1308.44 | 73.0 | 1.0 | 0.30 | 0.04 | 0.035 | 149.0 | 12 | 889.74 | 150.3 |
| 343 | 1308.22 | 73.0 | 1.0 | 0.30 | 0.04 | 0.035 | 149.0 | 12 | 881.16 | 150.3 |
| 344 | 1308.77 | 73.0 | 1.0 | 0.30 | 0.04 | 0.035 | 149.0 | 12 | 876.38 | 150.3 |
| 345 | 1306.41 | 73.0 | 1.0 | 0.30 | 0.04 | 0.035 | 149.0 | 12 | 854.65 | 150.3 |
| 346 | 1298.38 | 71.8 | 1.0 | 0.30 | 0.04 | 0.035 | 149.0 | 12 | 857.27 | 150.3 |
| 347 | 1292.54 | 71.8 | 1.0 | 0.30 | 0.04 | 0.035 | 149.0 | 12 | 829.77 | 150.3 |
| 348 | 1290.22 | 71.8 | 1.0 | 0.30 | 0.04 | 0.035 | 149.0 | 12 | 800.03 | 150.3 |
| 349 | 1255.56 | 70.5 | 1.0 | 0.30 | 0.04 | 0.035 | 149.0 | 12 | 763.43 | 150.3 |
| 350 | 1232.90 | 70.5 | 1.0 | 0.30 | 0.04 | 0.035 | 149.0 | 12 | 721.92 | 150.3 |
| 351 | 1241.37 | 70.5 | 1.0 | 0.30 | 0.04 | 0.035 | 149.0 | 12 | 734.72 | 150.3 |
| 352 | 1246.29 | 70.5 | 1.0 | 0.30 | 0.04 | 0.035 | 149.0 | 12 | 748.61 | 150.3 |
| 353 | 1237.71 | 70.5 | 1.0 | 0.30 | 0.04 | 0.035 | 149.0 | 12 | 733.13 | 150.3 |
| 354 | 1223.04 | 70.5 | 1.0 | 0.30 | 0.04 | 0.035 | 149.0 | 12 | 707.38 | 150.3 |
| 355 | 1205.41 | 70.5 | 1.0 | 0.30 | 0.04 | 0.035 | 149.0 | 12 | 679.78 | 150.3 |
| 356 | 1184.80 | 70.5 | 1.0 | 0.30 | 0.04 | 0.035 | 149.0 | 12 | 652.70 | 150.3 |
| 357 | 925.27 | 76.7 | 1.0 | 0.30 | 0.15 | 0.035 | 149.0 | 12 | 420.73 | 150.3 |
| 358 | 974.57 | 78.0 | 1.0 | 0.30 | 0.15 | 0.035 | 149.0 | 12 | 435.00 | 150.3 |
| 359 | 1016.01 | 78.0 | 1.0 | 0.30 | 0.15 | 0.035 | 149.0 | 12 | 453.12 | 150.3 |
| 360 | 1050.27 | 78.0 | 1.0 | 0.30 | 0.15 | 0.035 | 149.0 | 12 | 468.62 | 150.3 |
| 361 | 1089.01 | 78.0 | 1.0 | 0.30 | 0.15 | 0.035 | 149.0 | 12 | 501.29 | 150.3 |
| 362 | 1117.08 | 78.0 | 1.0 | 0.30 | 0.15 | 0.035 | 149.0 | 12 | 540.40 | 150.3 |
| 363 | 1127.18 | 78.0 | 1.0 | 0.30 | 0.15 | 0.035 | 149.0 | 12 | 571.01 | 150.3 |
| 364 | 1128.49 | 78.0 | 1.0 | 0.30 | 0.15 | 0.035 | 149.0 | 12 | 594.98 | 150.3 |
| 365 | 1159.48 | 78.0 | 1.0 | 0.30 | 0.15 | 0.035 | 149.0 | 12 | 609.07 | 150.3 |
| 366 | 1156.15 | 78.0 | 1.0 | 0.30 | 0.15 | 0.035 | 149.0 | 12 | 594.91 | 150.3 |
| 367 | 1111.09 | 78.0 | 1.0 | 0.30 | 0.04 | 0.035 | 149.0 | 12 | 531.38 | 150.3 |
| 368 | 1063.91 | 78.0 | 1.0 | 0.30 | 0.04 | 0.035 | 149.0 | 12 | 450.87 | 150.3 |
| 369 | 1104.39 | 74.8 | 1.0 | 0.30 | 0.15 | 0.035 | 149.0 | 12 | 472.40 | 150.3 |
| 370 | 1116.73 | 74.8 | 1.0 | 0.30 | 0.15 | 0.035 | 149.0 | 12 | 484.23 | 150.3 |
| 371 | 1124.33 | 78.0 | 1.0 | 0.30 | 0.15 | 0.035 | 149.0 | 12 | 514.93 | 150.3 |
| 372 | 1092.41 | 78.0 | 1.0 | 0.30 | 0.15 | 0.035 | 149.0 | 12 | 494.45 | 150.3 |
| 373 | 1061.91 | 70.5 | 1.0 | 0.30 | 0.15 | 0.035 | 149.0 | 12 | 479.26 | 150.3 |
| 374 | 1078.22 | 70.5 | 1.0 | 0.30 | 0.15 | 0.035 | 149.0 | 12 | 456.87 | 150.3 |
| 375 | 1045.91 | 70.5 | 1.0 | 0.30 | 0.15 | 0.035 | 149.0 | 12 | 411.46 | 150.3 |
| 376 | 1019.76 | 70.5 | 1.0 | 0.30 | 0.15 | 0.035 | 149.0 | 12 | 395.37 | 150.3 |
| 377 | 1008.09 | 70.5 | 1.0 | 0.30 | 0.15 | 0.035 | 149.0 | 12 | 396.83 | 150.3 |
| 378 | 723.13 | 70.5 | 1.0 | 0.30 | 0.04 | 0.035 | 149.0 | 12 | 274.57 | 150.3 |
| 379 | 762.72 | 74.8 | 1.0 | 0.30 | 0.04 | 0.035 | 149.0 | 12 | 265.85 | 150.3 |

| | | | | | | | | | | |
|-----|--------|------|-----|------|------|-------|-------|----|--------|-------|
| 380 | 788.91 | 74.8 | 1.0 | 0.30 | 0.04 | 0.035 | 149.0 | 12 | 276.32 | 150.3 |
| 381 | 779.40 | 70.5 | 1.0 | 0.30 | 0.04 | 0.035 | 149.0 | 12 | 278.43 | 150.3 |

RECEPTOR SUMMARY FOR UNSTABLE HOURS

| REC # | CONC UG/M**3 | WD DEG | WS M/S | ZI M | W* M/S | L M | <---- PEAK SOURCE -----> | | | |
|----------|-----------------|-----------|-----------|---------|-----------|--------|--------------------------|----------------|-------|----------|
| | | | | | | | NS UG/M**3 | SRC UG/M**3 | CTRIB | HPL M |
| 1 | 131.48 | 80.6 | 1.0 | 200.0 | 1.11 | -10.0 | 12 | 62.84 | 180.0 | 0.10 |
| 2 | 145.85 | 80.6 | 1.0 | 200.0 | 1.11 | -10.0 | 12 | 70.63 | 180.0 | 0.10 |
| 3 | 163.47 | 80.6 | 1.0 | 200.0 | 1.08 | -50.0 | 12 | 81.04 | 180.0 | 0.10 |
| 4 | 185.18 | 80.6 | 1.0 | 200.0 | 1.08 | -50.0 | 12 | 93.35 | 180.0 | 0.10 |
| 5 | 209.20 | 80.6 | 1.0 | 200.0 | 1.08 | -50.0 | 12 | 107.94 | 180.0 | 0.10 |
| 6 | 281.35 | 80.6 | 1.0 | 200.0 | 0.53 | -90.0 | 12 | 219.40 | 180.0 | 0.10 |
| 7 | 409.75 | 80.6 | 1.0 | 200.0 | 0.53 | -90.0 | 12 | 322.01 | 180.0 | 0.10 |
| 8 | 576.76 | 80.6 | 1.0 | 200.0 | 0.53 | -90.0 | 12 | 460.85 | 180.0 | 0.10 |
| 9 | 676.07 | 80.6 | 1.0 | 178.3 | 0.51 | -90.0 | 12 | 537.77 | 160.5 | 0.30 |
| 10 | 767.20 | 80.6 | 1.0 | 200.0 | 0.65 | -50.0 | 12 | 521.53 | 180.0 | 0.10 |
| 11 | 684.24 | 79.3 | 1.0 | 200.0 | 0.89 | -90.0 | 12 | 412.14 | 180.0 | 0.10 |
| 12 | 657.73 | 63.9 | 1.0 | 200.0 | 0.89 | -90.0 | 12 | 433.17 | 180.0 | 0.10 |
| 13 | 638.79 | 62.5 | 1.0 | 200.0 | 1.11 | -10.0 | 12 | 327.13 | 180.0 | 0.10 |
| 14 | 143.24 | 80.6 | 1.0 | 200.0 | 1.08 | -50.0 | 12 | 68.66 | 180.0 | 0.10 |
| 15 | 159.42 | 80.6 | 1.0 | 200.0 | 1.08 | -50.0 | 12 | 77.43 | 180.0 | 0.10 |
| 16 | 178.99 | 80.6 | 1.0 | 200.0 | 1.08 | -50.0 | 12 | 88.21 | 180.0 | 0.10 |
| 17 | 201.99 | 80.6 | 1.0 | 200.0 | 1.08 | -50.0 | 12 | 101.00 | 180.0 | 0.10 |
| 18 | 253.42 | 80.6 | 1.0 | 200.0 | 0.53 | -90.0 | 12 | 192.12 | 180.0 | 0.10 |
| 19 | 356.15 | 80.6 | 1.0 | 200.0 | 0.53 | -90.0 | 12 | 273.12 | 180.0 | 0.10 |
| 20 | 501.39 | 80.6 | 1.0 | 200.0 | 0.53 | -90.0 | 12 | 386.92 | 180.0 | 0.10 |
| 21 | 690.98 | 80.6 | 1.0 | 200.0 | 0.53 | -90.0 | 12 | 533.20 | 180.0 | 0.10 |
| 22 | 756.57 | 80.6 | 1.0 | 178.3 | 0.51 | -90.0 | 12 | 557.28 | 160.5 | 0.30 |
| 23 | 757.31 | 79.4 | 1.0 | 200.0 | 0.65 | -50.0 | 12 | 466.72 | 180.0 | 0.10 |
| 24 | 667.13 | 74.0 | 1.0 | 200.0 | 0.89 | -90.0 | 12 | 388.27 | 180.0 | 0.10 |
| 25 | 655.11 | 62.5 | 1.0 | 200.0 | 0.89 | -90.0 | 12 | 379.76 | 180.0 | 0.10 |
| 26 | 121.50 | 80.6 | 1.0 | 200.0 | 1.11 | -10.0 | 12 | 56.52 | 180.0 | 0.10 |
| 27 | 135.85 | 80.6 | 1.0 | 200.0 | 1.08 | -50.0 | 12 | 64.05 | 180.0 | 0.10 |
| 28 | 150.55 | 80.6 | 1.0 | 200.0 | 1.08 | -50.0 | 12 | 71.70 | 180.0 | 0.10 |
| 29 | 171.24 | 80.6 | 1.0 | 200.0 | 0.89 | -90.0 | 12 | 88.14 | 180.0 | 0.10 |
| 30 | 198.08 | 80.6 | 1.0 | 200.0 | 0.89 | -90.0 | 12 | 103.49 | 180.0 | 0.10 |
| 31 | 249.18 | 80.6 | 1.0 | 200.0 | 0.37 | -10.0 | 12 | 214.58 | 180.0 | 0.10 |
| 32 | 382.42 | 80.6 | 1.0 | 200.0 | 0.37 | -10.0 | 12 | 329.98 | 180.0 | 0.10 |
| 33 | 490.27 | 80.6 | 1.0 | 200.0 | 0.37 | -10.0 | 12 | 428.70 | 180.0 | 0.10 |
| 34 | 600.36 | 80.6 | 1.0 | 178.3 | 0.35 | -10.0 | 12 | 523.29 | 160.5 | 0.30 |
| 35 | 731.99 | 80.6 | 1.0 | 200.0 | 0.53 | -90.0 | 12 | 533.29 | 180.0 | 0.10 |
| 36 | 808.41 | 80.6 | 1.0 | 200.0 | 0.53 | -90.0 | 12 | 542.10 | 180.0 | 0.10 |
| 37 | 757.66 | 77.8 | 1.0 | 200.0 | 0.65 | -50.0 | 12 | 447.46 | 180.0 | 0.10 |
| 38 | 633.84 | 74.0 | 1.0 | 200.0 | 0.65 | -50.0 | 12 | 277.42 | 180.0 | 0.10 |
| 39 | 600.11 | 63.8 | 1.0 | 200.0 | 0.89 | -90.0 | 12 | 285.89 | 180.0 | 0.10 |
| 40 | 618.31 | 79.4 | 1.0 | 178.3 | 0.51 | -90.0 | 8 | 218.04 | 160.5 | 0.53 |
| 41 | 816.55 | 80.6 | 1.0 | 200.0 | 0.18 | -90.0 | 12 | 309.41 | 180.0 | 0.10 |
| 42 | 832.79 | 80.6 | 1.0 | 200.0 | 0.18 | -90.0 | 12 | 390.54 | 180.0 | 0.10 |
| 43 | 825.47 | 80.6 | 1.0 | 200.0 | 0.18 | -90.0 | 12 | 495.25 | 180.0 | 0.10 |
| 44 | 730.21 | 80.6 | 1.0 | 200.0 | 0.18 | -90.0 | 12 | 548.27 | 180.0 | 0.10 |
| 45 | 484.12 | 80.6 | 1.0 | 200.0 | 0.18 | -90.0 | 12 | 415.97 | 180.0 | 0.10 |
| 46 | 215.69 | 80.6 | 1.0 | 200.0 | 0.53 | -90.0 | 12 | 103.80 | 180.0 | 0.10 |
| 47 | 201.74 | 80.6 | 1.0 | 200.0 | 0.53 | -90.0 | 12 | 101.31 | 180.0 | 0.10 |
| 48 | 161.98 | 80.6 | 1.0 | 200.0 | 0.65 | -50.0 | 12 | 78.23 | 180.0 | 0.10 |
| 49 | 151.18 | 80.6 | 1.0 | 200.0 | 0.65 | -50.0 | 12 | 72.31 | 180.0 | 0.10 |

| | | | | | | | | | | |
|-----|--------|------|-----|-------|------|-------|----|--------|-------|------|
| 50 | 134.34 | 80.6 | 1.0 | 200.0 | 0.65 | -50.0 | 12 | 65.75 | 180.0 | 0.10 |
| 51 | 124.87 | 80.6 | 1.0 | 200.0 | 0.89 | -90.0 | 12 | 57.06 | 180.0 | 0.10 |
| 52 | 121.68 | 80.6 | 1.0 | 200.0 | 0.89 | -90.0 | 12 | 56.69 | 180.0 | 0.10 |
| 53 | 121.49 | 80.6 | 1.0 | 200.0 | 0.89 | -90.0 | 12 | 57.60 | 180.0 | 0.10 |
| 54 | 135.27 | 80.6 | 1.0 | 200.0 | 0.89 | -90.0 | 12 | 64.27 | 180.0 | 0.10 |
| 55 | 126.93 | 80.6 | 1.0 | 200.0 | 1.08 | -50.0 | 12 | 58.30 | 180.0 | 0.10 |
| 56 | 136.57 | 80.6 | 1.0 | 200.0 | 1.08 | -50.0 | 12 | 63.54 | 180.0 | 0.10 |
| 57 | 153.66 | 80.6 | 1.0 | 200.0 | 0.89 | -90.0 | 12 | 76.26 | 180.0 | 0.10 |
| 58 | 180.76 | 80.6 | 1.0 | 200.0 | 0.89 | -90.0 | 12 | 88.18 | 180.0 | 0.10 |
| 59 | 189.65 | 80.6 | 1.0 | 200.0 | 0.89 | -90.0 | 12 | 93.92 | 180.0 | 0.10 |
| 60 | 201.81 | 80.6 | 1.0 | 200.0 | 0.89 | -90.0 | 12 | 102.61 | 180.0 | 0.10 |
| 61 | 291.66 | 80.6 | 1.0 | 200.0 | 0.37 | -10.0 | 12 | 242.27 | 180.0 | 0.10 |
| 62 | 420.70 | 80.6 | 1.0 | 200.0 | 0.37 | -10.0 | 12 | 348.76 | 180.0 | 0.10 |
| 63 | 528.32 | 80.6 | 1.0 | 200.0 | 0.37 | -10.0 | 12 | 448.66 | 180.0 | 0.10 |
| 64 | 670.80 | 80.6 | 1.0 | 200.0 | 0.37 | -10.0 | 12 | 569.45 | 180.0 | 0.10 |
| 65 | 744.15 | 80.6 | 1.0 | 178.3 | 0.35 | -10.0 | 12 | 617.33 | 160.5 | 0.30 |
| 66 | 814.38 | 80.6 | 1.0 | 200.0 | 0.53 | -90.0 | 12 | 545.54 | 180.0 | 0.10 |
| 67 | 754.83 | 79.4 | 1.0 | 200.0 | 0.53 | -90.0 | 12 | 421.51 | 180.0 | 0.10 |
| 68 | 713.40 | 74.0 | 1.0 | 200.0 | 0.65 | -50.0 | 12 | 369.46 | 180.0 | 0.10 |
| 69 | 667.59 | 63.8 | 1.0 | 200.0 | 0.65 | -50.0 | 12 | 339.39 | 180.0 | 0.10 |
| 70 | 650.57 | 55.2 | 1.0 | 200.0 | 0.65 | -50.0 | 12 | 308.04 | 180.0 | 0.10 |
| 71 | 640.90 | 62.5 | 1.0 | 200.0 | 0.53 | -90.0 | 1 | 212.09 | 180.0 | 0.39 |
| 72 | 636.93 | 55.2 | 1.0 | 200.0 | 0.53 | -90.0 | 1 | 192.93 | 180.0 | 0.39 |
| 73 | 666.83 | 63.8 | 1.0 | 200.0 | 0.37 | -10.0 | 8 | 234.38 | 180.0 | 0.37 |
| 74 | 678.57 | 55.2 | 1.0 | 200.0 | 0.37 | -10.0 | 1 | 215.58 | 180.0 | 0.39 |
| 75 | 648.75 | 55.2 | 1.0 | 200.0 | 0.37 | -10.0 | 1 | 193.65 | 180.0 | 0.39 |
| 76 | 595.63 | 55.2 | 1.0 | 200.0 | 0.37 | -10.0 | 12 | 170.17 | 180.0 | 0.10 |
| 77 | 863.26 | 80.6 | 1.0 | 200.0 | 0.18 | -90.0 | 12 | 323.05 | 180.0 | 0.10 |
| 78 | 880.80 | 80.6 | 1.0 | 200.0 | 0.18 | -90.0 | 12 | 415.66 | 180.0 | 0.10 |
| 79 | 872.54 | 80.6 | 1.0 | 200.0 | 0.18 | -90.0 | 12 | 538.39 | 180.0 | 0.10 |
| 80 | 772.39 | 80.6 | 1.0 | 200.0 | 0.18 | -90.0 | 12 | 596.21 | 180.0 | 0.10 |
| 81 | 476.26 | 80.6 | 1.0 | 200.0 | 0.18 | -90.0 | 12 | 417.53 | 180.0 | 0.10 |
| 82 | 263.30 | 80.6 | 1.0 | 200.0 | 0.22 | -50.0 | 12 | 226.94 | 180.0 | 0.10 |
| 83 | 199.42 | 80.6 | 1.0 | 200.0 | 0.65 | -50.0 | 12 | 95.19 | 180.0 | 0.10 |
| 84 | 185.03 | 80.6 | 1.0 | 200.0 | 0.65 | -50.0 | 12 | 91.77 | 180.0 | 0.10 |
| 85 | 192.11 | 80.6 | 1.0 | 200.0 | 0.65 | -50.0 | 12 | 97.56 | 180.0 | 0.10 |
| 86 | 190.90 | 80.6 | 1.0 | 200.0 | 0.65 | -50.0 | 12 | 90.81 | 180.0 | 0.10 |
| 87 | 230.82 | 80.6 | 1.0 | 200.0 | 0.37 | -10.0 | 12 | 176.40 | 180.0 | 0.10 |
| 88 | 285.79 | 80.6 | 1.0 | 200.0 | 0.37 | -10.0 | 12 | 223.16 | 180.0 | 0.10 |
| 89 | 387.07 | 80.6 | 1.0 | 200.0 | 0.37 | -10.0 | 12 | 303.64 | 180.0 | 0.10 |
| 90 | 480.89 | 80.6 | 1.0 | 200.0 | 0.37 | -10.0 | 12 | 385.18 | 180.0 | 0.10 |
| 91 | 563.54 | 80.6 | 1.0 | 200.0 | 0.37 | -10.0 | 12 | 468.72 | 180.0 | 0.10 |
| 92 | 742.98 | 80.6 | 1.0 | 200.0 | 0.37 | -10.0 | 12 | 615.06 | 180.0 | 0.10 |
| 93 | 795.68 | 80.6 | 1.0 | 178.3 | 0.35 | -10.0 | 12 | 646.57 | 160.5 | 0.30 |
| 94 | 804.62 | 80.6 | 1.0 | 200.0 | 0.53 | -90.0 | 12 | 529.26 | 180.0 | 0.10 |
| 95 | 773.08 | 78.3 | 1.0 | 200.0 | 0.53 | -90.0 | 12 | 449.43 | 180.0 | 0.10 |
| 96 | 711.06 | 74.0 | 1.0 | 200.0 | 0.65 | -50.0 | 12 | 365.18 | 180.0 | 0.10 |
| 97 | 676.30 | 63.8 | 1.0 | 200.0 | 0.65 | -50.0 | 12 | 342.54 | 180.0 | 0.10 |
| 98 | 640.74 | 62.5 | 1.0 | 200.0 | 0.65 | -50.0 | 12 | 225.54 | 180.0 | 0.10 |
| 99 | 657.44 | 55.2 | 1.0 | 200.0 | 0.53 | -90.0 | 12 | 233.08 | 180.0 | 0.10 |
| 100 | 627.64 | 63.9 | 1.0 | 178.3 | 0.35 | -10.0 | 8 | 199.52 | 160.5 | 0.53 |
| 101 | 685.37 | 63.9 | 1.0 | 200.0 | 0.37 | -10.0 | 8 | 218.54 | 180.0 | 0.37 |
| 102 | 671.70 | 62.5 | 1.0 | 200.0 | 0.37 | -10.0 | 1 | 209.47 | 180.0 | 0.39 |
| 103 | 620.04 | 55.2 | 1.0 | 200.0 | 0.37 | -10.0 | 12 | 229.11 | 180.0 | 0.10 |
| 104 | 610.83 | 63.9 | 1.0 | 178.3 | 0.21 | -50.0 | 8 | 200.84 | 160.5 | 0.53 |
| 105 | 916.68 | 80.6 | 1.0 | 200.0 | 0.18 | -90.0 | 12 | 366.37 | 180.0 | 0.10 |
| 106 | 925.62 | 80.6 | 1.0 | 200.0 | 0.18 | -90.0 | 12 | 488.18 | 180.0 | 0.10 |
| 107 | 871.60 | 80.6 | 1.0 | 200.0 | 0.18 | -90.0 | 12 | 607.57 | 180.0 | 0.10 |
| 108 | 690.98 | 80.6 | 1.0 | 200.0 | 0.18 | -90.0 | 12 | 575.56 | 180.0 | 0.10 |
| 109 | 459.37 | 80.6 | 1.0 | 200.0 | 0.18 | -90.0 | 12 | 412.15 | 180.0 | 0.10 |

| | | | | | | | | | | |
|-----|--------|------|-----|-------|------|-------|----|--------|-------|------|
| 110 | 406.26 | 80.6 | 1.0 | 200.0 | 0.22 | -50.0 | 12 | 349.08 | 180.0 | 0.10 |
| 111 | 421.78 | 80.6 | 1.0 | 200.0 | 0.22 | -50.0 | 12 | 371.92 | 180.0 | 0.10 |
| 112 | 486.07 | 80.6 | 1.0 | 200.0 | 0.22 | -50.0 | 12 | 434.65 | 180.0 | 0.10 |
| 113 | 585.67 | 80.6 | 1.0 | 200.0 | 0.22 | -50.0 | 12 | 526.76 | 180.0 | 0.10 |
| 114 | 661.41 | 80.6 | 1.0 | 178.3 | 0.21 | -50.0 | 12 | 593.20 | 160.5 | 0.30 |
| 115 | 667.15 | 80.6 | 1.0 | 178.3 | 0.21 | -50.0 | 12 | 606.32 | 160.5 | 0.30 |
| 116 | 618.01 | 80.6 | 1.0 | 200.0 | 0.37 | -10.0 | 12 | 473.01 | 180.0 | 0.10 |
| 117 | 731.45 | 80.6 | 1.0 | 200.0 | 0.37 | -10.0 | 12 | 581.87 | 180.0 | 0.10 |
| 118 | 818.57 | 80.6 | 1.0 | 200.0 | 0.37 | -10.0 | 12 | 661.24 | 180.0 | 0.10 |
| 119 | 769.71 | 80.6 | 1.0 | 178.3 | 0.35 | -10.0 | 12 | 589.65 | 160.5 | 0.30 |
| 120 | 813.56 | 80.6 | 1.0 | 200.0 | 0.53 | -90.0 | 12 | 478.46 | 180.0 | 0.10 |
| 121 | 725.08 | 74.0 | 1.0 | 200.0 | 0.53 | -90.0 | 12 | 398.59 | 180.0 | 0.10 |
| 122 | 667.35 | 63.9 | 1.0 | 200.0 | 0.65 | -50.0 | 12 | 377.96 | 180.0 | 0.10 |
| 123 | 637.86 | 62.5 | 1.0 | 200.0 | 0.65 | -50.0 | 12 | 257.44 | 180.0 | 0.10 |
| 124 | 657.66 | 75.8 | 1.0 | 178.3 | 0.35 | -10.0 | 8 | 223.84 | 160.5 | 0.53 |
| 125 | 658.20 | 74.0 | 1.0 | 200.0 | 0.37 | -10.0 | 8 | 237.54 | 180.0 | 0.37 |
| 126 | 681.10 | 63.9 | 1.0 | 200.0 | 0.37 | -10.0 | 1 | 220.34 | 180.0 | 0.39 |
| 127 | 670.41 | 63.8 | 1.0 | 200.0 | 0.37 | -10.0 | 1 | 204.25 | 180.0 | 0.39 |
| 128 | 618.40 | 62.5 | 1.0 | 200.0 | 0.37 | -10.0 | 1 | 171.13 | 180.0 | 0.39 |
| 129 | 563.33 | 62.5 | 1.0 | 200.0 | 0.37 | -10.0 | 12 | 152.19 | 180.0 | 0.10 |
| 130 | 555.05 | 63.9 | 1.0 | 178.3 | 0.21 | -50.0 | 1 | 177.97 | 160.5 | 0.57 |
| 131 | 928.39 | 80.6 | 1.0 | 200.0 | 0.18 | -90.0 | 12 | 303.72 | 180.0 | 0.10 |
| 132 | 957.74 | 80.6 | 1.0 | 200.0 | 0.18 | -90.0 | 12 | 386.63 | 180.0 | 0.10 |
| 133 | 945.66 | 80.6 | 1.0 | 200.0 | 0.18 | -90.0 | 12 | 524.86 | 180.0 | 0.10 |
| 134 | 882.14 | 80.6 | 1.0 | 200.0 | 0.18 | -90.0 | 12 | 640.49 | 180.0 | 0.10 |
| 135 | 724.30 | 80.6 | 1.0 | 200.0 | 0.18 | -90.0 | 12 | 611.39 | 180.0 | 0.10 |
| 136 | 717.29 | 80.6 | 1.0 | 200.0 | 0.18 | -90.0 | 12 | 626.24 | 180.0 | 0.10 |
| 137 | 801.61 | 80.6 | 1.0 | 200.0 | 0.18 | -90.0 | 12 | 705.05 | 180.0 | 0.10 |
| 138 | 784.77 | 80.6 | 1.0 | 178.3 | 0.17 | -90.0 | 12 | 697.01 | 160.5 | 0.30 |
| 139 | 870.35 | 80.6 | 1.0 | 200.0 | 0.22 | -50.0 | 12 | 737.60 | 180.0 | 0.10 |
| 140 | 935.00 | 80.6 | 1.0 | 200.0 | 0.22 | -50.0 | 12 | 802.18 | 180.0 | 0.10 |
| 141 | 910.57 | 80.6 | 1.0 | 178.3 | 0.21 | -50.0 | 12 | 796.87 | 160.5 | 0.30 |
| 142 | 701.46 | 80.6 | 1.0 | 178.3 | 0.21 | -50.0 | 12 | 666.09 | 160.5 | 0.30 |
| 143 | 796.78 | 80.6 | 1.0 | 200.0 | 0.37 | -10.0 | 12 | 606.47 | 180.0 | 0.10 |
| 144 | 894.74 | 80.6 | 1.0 | 200.0 | 0.37 | -10.0 | 12 | 685.07 | 180.0 | 0.10 |
| 145 | 799.15 | 80.5 | 1.0 | 178.3 | 0.35 | -10.0 | 12 | 549.08 | 160.5 | 0.30 |
| 146 | 777.78 | 78.3 | 1.0 | 200.0 | 0.53 | -90.0 | 12 | 433.03 | 180.0 | 0.10 |
| 147 | 719.56 | 74.0 | 1.0 | 200.0 | 0.53 | -90.0 | 12 | 336.07 | 180.0 | 0.10 |
| 148 | 661.20 | 63.9 | 1.0 | 200.0 | 0.53 | -90.0 | 12 | 329.33 | 180.0 | 0.10 |
| 149 | 676.26 | 79.3 | 1.0 | 178.3 | 0.35 | -10.0 | 8 | 228.45 | 160.5 | 0.53 |
| 150 | 685.51 | 74.0 | 1.0 | 200.0 | 0.37 | -10.0 | 8 | 239.71 | 180.0 | 0.37 |
| 151 | 676.20 | 74.0 | 1.0 | 200.0 | 0.37 | -10.0 | 8 | 216.60 | 180.0 | 0.37 |
| 152 | 680.23 | 63.9 | 1.0 | 200.0 | 0.37 | -10.0 | 12 | 246.18 | 180.0 | 0.10 |
| 153 | 633.05 | 63.9 | 1.0 | 200.0 | 0.37 | -10.0 | 12 | 212.43 | 180.0 | 0.10 |
| 154 | 665.60 | 74.0 | 1.0 | 178.3 | 0.21 | -50.0 | 8 | 209.38 | 160.5 | 0.53 |
| 155 | 720.33 | 74.0 | 1.0 | 178.3 | 0.21 | -50.0 | 8 | 228.51 | 160.5 | 0.53 |
| 156 | 718.71 | 74.0 | 1.0 | 178.3 | 0.21 | -50.0 | 8 | 230.33 | 160.5 | 0.53 |
| 157 | 643.90 | 74.0 | 1.0 | 178.3 | 0.21 | -50.0 | 8 | 200.09 | 160.5 | 0.53 |
| 158 | 537.79 | 74.0 | 1.0 | 200.0 | 0.22 | -50.0 | 8 | 177.50 | 180.0 | 0.37 |
| 159 | 495.32 | 63.9 | 1.0 | 200.0 | 0.22 | -50.0 | 12 | 209.04 | 180.0 | 0.10 |
| 160 | 881.30 | 80.3 | 1.0 | 200.0 | 0.18 | -90.0 | 1 | 226.91 | 180.0 | 0.39 |
| 161 | 919.97 | 80.6 | 1.0 | 200.0 | 0.18 | -90.0 | 12 | 252.87 | 180.0 | 0.10 |
| 162 | 952.81 | 80.6 | 1.0 | 200.0 | 0.18 | -90.0 | 12 | 308.62 | 180.0 | 0.10 |
| 163 | 984.72 | 80.6 | 1.0 | 200.0 | 0.18 | -90.0 | 12 | 382.57 | 180.0 | 0.10 |
| 164 | 973.73 | 80.6 | 1.0 | 200.0 | 0.18 | -90.0 | 12 | 529.85 | 180.0 | 0.10 |
| 165 | 932.13 | 80.6 | 1.0 | 200.0 | 0.18 | -90.0 | 12 | 670.31 | 180.0 | 0.10 |
| 166 | 838.26 | 80.6 | 1.0 | 200.0 | 0.18 | -90.0 | 12 | 693.00 | 180.0 | 0.10 |
| 167 | 915.28 | 80.6 | 1.0 | 200.0 | 0.18 | -90.0 | 12 | 772.49 | 180.0 | 0.10 |
| 168 | 967.58 | 80.6 | 1.0 | 200.0 | 0.18 | -90.0 | 12 | 828.80 | 180.0 | 0.10 |
| 169 | 974.09 | 80.6 | 1.0 | 178.3 | 0.17 | -90.0 | 12 | 836.43 | 160.5 | 0.30 |

| | | | | | | | | | | |
|-----|---------|------|-----|-------|------|-------|----|--------|-------|------|
| 170 | 1031.16 | 80.6 | 1.0 | 200.0 | 0.22 | -50.0 | 12 | 841.97 | 180.0 | 0.10 |
| 171 | 972.16 | 80.6 | 1.0 | 178.3 | 0.21 | -50.0 | 12 | 828.28 | 160.5 | 0.30 |
| 172 | 891.71 | 80.6 | 1.0 | 178.3 | 0.21 | -50.0 | 12 | 786.29 | 160.5 | 0.30 |
| 173 | 779.69 | 80.6 | 1.0 | 200.0 | 0.37 | -10.0 | 12 | 568.06 | 180.0 | 0.10 |
| 174 | 890.41 | 80.6 | 1.0 | 200.0 | 0.37 | -10.0 | 12 | 683.04 | 180.0 | 0.10 |
| 175 | 847.92 | 80.6 | 1.0 | 178.3 | 0.35 | -10.0 | 12 | 608.68 | 160.5 | 0.30 |
| 176 | 763.09 | 80.6 | 1.0 | 200.0 | 0.53 | -90.0 | 12 | 409.86 | 180.0 | 0.10 |
| 177 | 746.94 | 74.0 | 1.0 | 200.0 | 0.53 | -90.0 | 12 | 397.62 | 180.0 | 0.10 |
| 178 | 688.11 | 63.9 | 1.0 | 200.0 | 0.53 | -90.0 | 12 | 391.25 | 180.0 | 0.10 |
| 179 | 690.42 | 80.6 | 1.0 | 178.3 | 0.35 | -10.0 | 8 | 229.00 | 160.5 | 0.53 |
| 180 | 698.73 | 75.8 | 1.0 | 200.0 | 0.37 | -10.0 | 8 | 238.01 | 180.0 | 0.37 |
| 181 | 692.89 | 74.0 | 1.0 | 200.0 | 0.37 | -10.0 | 1 | 218.15 | 180.0 | 0.39 |
| 182 | 679.69 | 63.9 | 1.0 | 200.0 | 0.37 | -10.0 | 12 | 331.46 | 180.0 | 0.10 |
| 183 | 660.03 | 75.8 | 1.0 | 178.3 | 0.21 | -50.0 | 8 | 209.03 | 160.5 | 0.53 |
| 184 | 715.10 | 74.0 | 1.0 | 178.3 | 0.21 | -50.0 | 8 | 229.69 | 160.5 | 0.53 |
| 185 | 734.76 | 76.7 | 1.0 | 178.3 | 0.21 | -50.0 | 8 | 230.00 | 160.5 | 0.53 |
| 186 | 911.90 | 77.3 | 1.0 | 200.0 | 0.22 | -50.0 | 1 | 295.67 | 180.0 | 0.39 |
| 187 | 855.18 | 76.7 | 1.0 | 200.0 | 0.22 | -50.0 | 8 | 276.95 | 180.0 | 0.37 |
| 188 | 682.34 | 74.0 | 1.0 | 200.0 | 0.22 | -50.0 | 8 | 228.41 | 180.0 | 0.37 |
| 189 | 582.65 | 74.0 | 1.0 | 200.0 | 0.22 | -50.0 | 8 | 194.34 | 180.0 | 0.37 |
| 190 | 533.86 | 62.5 | 1.0 | 200.0 | 0.22 | -50.0 | 12 | 357.44 | 180.0 | 0.10 |
| 191 | 872.54 | 79.9 | 1.0 | 200.0 | 0.18 | -90.0 | 1 | 223.13 | 180.0 | 0.39 |
| 192 | 914.36 | 80.6 | 1.0 | 200.0 | 0.18 | -90.0 | 1 | 240.79 | 180.0 | 0.39 |
| 193 | 953.59 | 80.6 | 1.0 | 200.0 | 0.18 | -90.0 | 12 | 267.17 | 180.0 | 0.10 |
| 194 | 989.93 | 80.6 | 1.0 | 200.0 | 0.18 | -90.0 | 12 | 324.29 | 180.0 | 0.10 |
| 195 | 1001.24 | 80.6 | 1.0 | 200.0 | 0.18 | -90.0 | 12 | 424.85 | 180.0 | 0.10 |
| 196 | 989.50 | 80.6 | 1.0 | 200.0 | 0.18 | -90.0 | 12 | 585.93 | 180.0 | 0.10 |
| 197 | 924.36 | 80.6 | 1.0 | 200.0 | 0.18 | -90.0 | 12 | 705.51 | 180.0 | 0.10 |
| 198 | 936.50 | 80.6 | 1.0 | 200.0 | 0.18 | -90.0 | 12 | 769.88 | 180.0 | 0.10 |
| 199 | 1058.28 | 80.6 | 1.0 | 200.0 | 0.18 | -90.0 | 12 | 857.13 | 180.0 | 0.10 |
| 200 | 1131.60 | 80.6 | 1.0 | 200.0 | 0.18 | -90.0 | 12 | 887.74 | 180.0 | 0.10 |
| 201 | 1059.98 | 80.6 | 1.0 | 178.3 | 0.17 | -90.0 | 12 | 855.00 | 160.5 | 0.30 |
| 202 | 1088.92 | 80.6 | 1.0 | 200.0 | 0.22 | -50.0 | 12 | 880.65 | 180.0 | 0.10 |
| 203 | 1040.20 | 80.6 | 1.0 | 178.3 | 0.21 | -50.0 | 12 | 877.87 | 160.5 | 0.30 |
| 204 | 807.92 | 80.6 | 1.0 | 178.3 | 0.21 | -50.0 | 12 | 748.83 | 160.5 | 0.30 |
| 205 | 869.68 | 80.6 | 1.0 | 200.0 | 0.37 | -10.0 | 12 | 634.92 | 180.0 | 0.10 |
| 206 | 922.80 | 80.6 | 1.0 | 200.0 | 0.37 | -10.0 | 12 | 643.08 | 180.0 | 0.10 |
| 207 | 733.95 | 75.8 | 1.0 | 178.3 | 0.35 | -10.0 | 12 | 532.95 | 160.5 | 0.30 |
| 208 | 751.10 | 75.8 | 1.0 | 200.0 | 0.53 | -90.0 | 12 | 389.93 | 180.0 | 0.10 |
| 209 | 698.51 | 63.9 | 1.0 | 200.0 | 0.53 | -90.0 | 12 | 419.74 | 180.0 | 0.10 |
| 210 | 694.87 | 80.6 | 1.0 | 200.0 | 0.37 | -10.0 | 8 | 246.65 | 180.0 | 0.37 |
| 211 | 709.00 | 76.7 | 1.0 | 200.0 | 0.37 | -10.0 | 8 | 230.30 | 180.0 | 0.37 |
| 212 | 705.55 | 74.0 | 1.0 | 200.0 | 0.37 | -10.0 | 1 | 227.55 | 180.0 | 0.39 |
| 213 | 744.73 | 80.6 | 1.0 | 178.3 | 0.21 | -50.0 | 8 | 227.43 | 160.5 | 0.53 |
| 214 | 736.58 | 79.3 | 1.0 | 178.3 | 0.21 | -50.0 | 8 | 233.31 | 160.5 | 0.53 |
| 215 | 733.61 | 75.8 | 1.0 | 178.3 | 0.21 | -50.0 | 8 | 234.93 | 160.5 | 0.53 |
| 216 | 771.25 | 76.7 | 1.0 | 178.3 | 0.21 | -50.0 | 8 | 247.95 | 160.5 | 0.53 |
| 217 | 973.97 | 80.6 | 1.0 | 178.3 | 0.17 | -90.0 | 8 | 310.93 | 160.5 | 0.53 |
| 218 | 1065.23 | 80.6 | 1.0 | 200.0 | 0.18 | -90.0 | 8 | 351.05 | 180.0 | 0.37 |
| 219 | 848.27 | 76.7 | 1.0 | 200.0 | 0.22 | -50.0 | 8 | 259.66 | 180.0 | 0.37 |
| 220 | 728.94 | 74.0 | 1.0 | 200.0 | 0.22 | -50.0 | 8 | 254.69 | 180.0 | 0.37 |
| 221 | 638.62 | 74.0 | 1.0 | 200.0 | 0.22 | -50.0 | 8 | 208.14 | 180.0 | 0.37 |
| 222 | 636.36 | 74.0 | 1.0 | 200.0 | 0.22 | -50.0 | 8 | 208.37 | 180.0 | 0.37 |
| 223 | 619.13 | 74.0 | 1.0 | 200.0 | 0.22 | -50.0 | 8 | 185.53 | 180.0 | 0.37 |
| 224 | 654.80 | 74.0 | 1.0 | 200.0 | 0.22 | -50.0 | 12 | 183.14 | 180.0 | 0.10 |
| 225 | 863.49 | 79.4 | 1.0 | 200.0 | 0.18 | -90.0 | 1 | 218.68 | 180.0 | 0.39 |
| 226 | 905.20 | 80.6 | 1.0 | 200.0 | 0.18 | -90.0 | 1 | 241.40 | 180.0 | 0.39 |
| 227 | 950.75 | 80.6 | 1.0 | 200.0 | 0.18 | -90.0 | 1 | 258.47 | 180.0 | 0.39 |
| 228 | 990.87 | 80.6 | 1.0 | 200.0 | 0.18 | -90.0 | 1 | 269.33 | 180.0 | 0.39 |
| 229 | 1018.01 | 80.6 | 1.0 | 200.0 | 0.18 | -90.0 | 12 | 334.25 | 180.0 | 0.10 |

| | | | | | | | | | | |
|-----|---------|------|-----|-------|------|-------|----|---------|-------|------|
| 230 | 1020.17 | 80.6 | 1.0 | 200.0 | 0.18 | -90.0 | 12 | 468.78 | 180.0 | 0.10 |
| 231 | 1019.11 | 80.6 | 1.0 | 200.0 | 0.18 | -90.0 | 12 | 651.29 | 180.0 | 0.10 |
| 232 | 1032.52 | 80.6 | 1.0 | 200.0 | 0.18 | -90.0 | 12 | 787.16 | 180.0 | 0.10 |
| 233 | 1110.24 | 80.6 | 1.0 | 200.0 | 0.18 | -90.0 | 12 | 859.00 | 180.0 | 0.10 |
| 234 | 1153.21 | 80.6 | 1.0 | 200.0 | 0.18 | -90.0 | 12 | 855.21 | 180.0 | 0.10 |
| 235 | 1076.68 | 80.6 | 1.0 | 200.0 | 0.22 | -50.0 | 12 | 776.59 | 180.0 | 0.10 |
| 236 | 1128.80 | 80.6 | 1.0 | 200.0 | 0.22 | -50.0 | 12 | 887.71 | 180.0 | 0.10 |
| 237 | 1078.60 | 80.6 | 1.0 | 178.3 | 0.21 | -50.0 | 12 | 885.73 | 160.5 | 0.30 |
| 238 | 788.91 | 80.6 | 1.0 | 200.0 | 0.37 | -10.0 | 12 | 527.10 | 180.0 | 0.10 |
| 239 | 909.28 | 80.6 | 1.0 | 200.0 | 0.37 | -10.0 | 12 | 633.68 | 180.0 | 0.10 |
| 240 | 892.54 | 80.6 | 1.0 | 200.0 | 0.37 | -10.0 | 12 | 560.07 | 180.0 | 0.10 |
| 241 | 720.61 | 78.3 | 1.0 | 200.0 | 0.53 | -90.0 | 12 | 380.40 | 180.0 | 0.10 |
| 242 | 727.50 | 74.0 | 1.0 | 200.0 | 0.53 | -90.0 | 12 | 347.74 | 180.0 | 0.10 |
| 243 | 675.73 | 80.6 | 1.0 | 200.0 | 0.37 | -10.0 | 8 | 233.41 | 180.0 | 0.37 |
| 244 | 723.15 | 79.9 | 1.0 | 200.0 | 0.37 | -10.0 | 8 | 231.95 | 180.0 | 0.37 |
| 245 | 725.74 | 74.0 | 1.0 | 200.0 | 0.37 | -10.0 | 1 | 224.72 | 180.0 | 0.39 |
| 246 | 764.58 | 80.6 | 1.0 | 178.3 | 0.21 | -50.0 | 8 | 229.20 | 160.5 | 0.53 |
| 247 | 834.13 | 80.6 | 1.0 | 178.3 | 0.21 | -50.0 | 8 | 262.58 | 160.5 | 0.53 |
| 248 | 794.33 | 79.3 | 1.0 | 178.3 | 0.21 | -50.0 | 8 | 252.47 | 160.5 | 0.53 |
| 249 | 803.39 | 79.4 | 1.0 | 200.0 | 0.22 | -50.0 | 8 | 269.09 | 180.0 | 0.37 |
| 250 | 1054.51 | 80.6 | 1.0 | 200.0 | 0.18 | -90.0 | 8 | 351.34 | 180.0 | 0.37 |
| 251 | 1141.07 | 80.3 | 1.0 | 200.0 | 0.18 | -90.0 | 1 | 393.69 | 180.0 | 0.39 |
| 252 | 1114.79 | 80.6 | 1.0 | 200.0 | 0.18 | -90.0 | 1 | 353.61 | 180.0 | 0.39 |
| 253 | 841.64 | 77.8 | 1.0 | 200.0 | 0.22 | -50.0 | 1 | 256.01 | 180.0 | 0.39 |
| 254 | 770.00 | 75.8 | 1.0 | 200.0 | 0.22 | -50.0 | 8 | 246.86 | 180.0 | 0.37 |
| 255 | 717.69 | 74.0 | 1.0 | 200.0 | 0.22 | -50.0 | 8 | 228.95 | 180.0 | 0.37 |
| 256 | 639.64 | 74.0 | 1.0 | 200.0 | 0.22 | -50.0 | 8 | 192.38 | 180.0 | 0.37 |
| 257 | 665.52 | 74.0 | 1.0 | 200.0 | 0.22 | -50.0 | 12 | 188.94 | 180.0 | 0.10 |
| 258 | 732.43 | 74.0 | 1.0 | 200.0 | 0.18 | -90.0 | 12 | 320.57 | 180.0 | 0.10 |
| 259 | 818.75 | 74.0 | 1.0 | 200.0 | 0.18 | -90.0 | 12 | 413.83 | 180.0 | 0.10 |
| 260 | 856.65 | 77.8 | 1.0 | 200.0 | 0.18 | -90.0 | 12 | 243.23 | 180.0 | 0.10 |
| 261 | 895.04 | 79.3 | 1.0 | 200.0 | 0.18 | -90.0 | 1 | 231.81 | 180.0 | 0.39 |
| 262 | 930.71 | 79.9 | 1.0 | 200.0 | 0.18 | -90.0 | 1 | 251.63 | 180.0 | 0.39 |
| 263 | 974.32 | 80.6 | 1.0 | 200.0 | 0.18 | -90.0 | 1 | 272.09 | 180.0 | 0.39 |
| 264 | 1011.62 | 80.6 | 1.0 | 200.0 | 0.18 | -90.0 | 1 | 282.23 | 180.0 | 0.39 |
| 265 | 1038.14 | 80.6 | 1.0 | 200.0 | 0.18 | -90.0 | 12 | 322.69 | 180.0 | 0.10 |
| 266 | 1045.93 | 80.6 | 1.0 | 200.0 | 0.18 | -90.0 | 12 | 451.14 | 180.0 | 0.10 |
| 267 | 1064.22 | 80.6 | 1.0 | 200.0 | 0.18 | -90.0 | 12 | 656.70 | 180.0 | 0.10 |
| 268 | 1101.71 | 80.6 | 1.0 | 200.0 | 0.18 | -90.0 | 12 | 813.07 | 180.0 | 0.10 |
| 269 | 1153.13 | 80.6 | 1.0 | 200.0 | 0.18 | -90.0 | 12 | 818.89 | 180.0 | 0.10 |
| 270 | 1192.11 | 74.0 | 1.0 | 200.0 | 0.18 | -90.0 | 12 | 1078.69 | 180.0 | 0.10 |
| 271 | 1142.09 | 77.2 | 1.0 | 178.3 | 0.17 | -90.0 | 12 | 975.84 | 160.5 | 0.30 |
| 272 | 1162.89 | 79.3 | 1.0 | 200.0 | 0.22 | -50.0 | 12 | 919.10 | 180.0 | 0.10 |
| 273 | 934.25 | 77.8 | 1.0 | 178.3 | 0.21 | -50.0 | 12 | 870.72 | 160.5 | 0.30 |
| 274 | 874.92 | 80.6 | 1.0 | 200.0 | 0.37 | -10.0 | 12 | 573.85 | 180.0 | 0.10 |
| 275 | 930.95 | 80.6 | 1.0 | 200.0 | 0.37 | -10.0 | 12 | 600.35 | 180.0 | 0.10 |
| 276 | 740.38 | 74.0 | 1.0 | 178.3 | 0.35 | -10.0 | 12 | 539.75 | 160.5 | 0.30 |
| 277 | 718.42 | 74.0 | 1.0 | 200.0 | 0.53 | -90.0 | 12 | 360.42 | 180.0 | 0.10 |
| 278 | 700.58 | 80.6 | 1.0 | 200.0 | 0.37 | -10.0 | 8 | 225.41 | 180.0 | 0.37 |
| 279 | 738.23 | 80.3 | 1.0 | 200.0 | 0.37 | -10.0 | 1 | 246.32 | 180.0 | 0.39 |
| 280 | 770.97 | 74.0 | 1.0 | 200.0 | 0.37 | -10.0 | 12 | 335.25 | 180.0 | 0.10 |
| 281 | 788.80 | 80.6 | 1.0 | 200.0 | 0.22 | -50.0 | 1 | 238.15 | 180.0 | 0.39 |
| 282 | 872.01 | 80.6 | 1.0 | 200.0 | 0.22 | -50.0 | 8 | 285.67 | 180.0 | 0.37 |
| 283 | 870.79 | 80.6 | 1.0 | 200.0 | 0.22 | -50.0 | 8 | 290.57 | 180.0 | 0.37 |
| 284 | 950.62 | 80.6 | 1.0 | 200.0 | 0.22 | -50.0 | 1 | 306.84 | 180.0 | 0.39 |
| 285 | 1118.69 | 80.5 | 1.0 | 200.0 | 0.18 | -90.0 | 1 | 396.32 | 180.0 | 0.39 |
| 286 | 1110.20 | 80.6 | 1.0 | 200.0 | 0.18 | -90.0 | 1 | 385.20 | 180.0 | 0.39 |
| 287 | 1096.32 | 80.6 | 1.0 | 200.0 | 0.18 | -90.0 | 1 | 354.71 | 180.0 | 0.39 |
| 288 | 804.47 | 78.3 | 1.0 | 200.0 | 0.22 | -50.0 | 1 | 240.77 | 180.0 | 0.39 |
| 289 | 726.07 | 76.7 | 1.0 | 200.0 | 0.22 | -50.0 | 8 | 225.89 | 180.0 | 0.37 |

| | | | | | | | | | | |
|-----|---------|------|-----|-------|------|-------|----|---------|-------|------|
| 290 | 648.07 | 63.9 | 1.0 | 200.0 | 0.18 | -90.0 | 12 | 584.88 | 180.0 | 0.10 |
| 291 | 689.46 | 74.0 | 1.0 | 200.0 | 0.22 | -50.0 | 12 | 197.04 | 180.0 | 0.10 |
| 292 | 731.75 | 75.8 | 1.0 | 200.0 | 0.18 | -90.0 | 1 | 206.68 | 180.0 | 0.39 |
| 293 | 881.04 | 78.3 | 1.0 | 200.0 | 0.18 | -90.0 | 1 | 223.65 | 180.0 | 0.39 |
| 294 | 926.55 | 78.3 | 1.0 | 200.0 | 0.18 | -90.0 | 1 | 241.32 | 180.0 | 0.39 |
| 295 | 956.03 | 79.9 | 1.0 | 200.0 | 0.18 | -90.0 | 1 | 266.70 | 180.0 | 0.39 |
| 296 | 992.17 | 80.6 | 1.0 | 200.0 | 0.18 | -90.0 | 1 | 283.06 | 180.0 | 0.39 |
| 297 | 1018.19 | 80.6 | 1.0 | 200.0 | 0.18 | -90.0 | 1 | 285.35 | 180.0 | 0.39 |
| 298 | 1033.46 | 80.6 | 1.0 | 200.0 | 0.18 | -90.0 | 12 | 347.79 | 180.0 | 0.10 |
| 299 | 1050.83 | 80.6 | 1.0 | 200.0 | 0.18 | -90.0 | 12 | 485.11 | 180.0 | 0.10 |
| 300 | 1100.98 | 80.6 | 1.0 | 200.0 | 0.18 | -90.0 | 12 | 689.71 | 180.0 | 0.10 |
| 301 | 1148.45 | 79.3 | 1.0 | 200.0 | 0.18 | -90.0 | 12 | 797.94 | 180.0 | 0.10 |
| 302 | 1196.20 | 74.0 | 1.0 | 200.0 | 0.18 | -90.0 | 12 | 1135.69 | 180.0 | 0.10 |
| 303 | 1151.68 | 78.3 | 1.0 | 200.0 | 0.22 | -50.0 | 12 | 882.75 | 180.0 | 0.10 |
| 304 | 1159.66 | 77.8 | 1.0 | 200.0 | 0.22 | -50.0 | 12 | 948.84 | 180.0 | 0.10 |
| 305 | 902.96 | 75.8 | 1.0 | 178.3 | 0.21 | -50.0 | 12 | 847.81 | 160.5 | 0.30 |
| 306 | 892.45 | 80.6 | 1.0 | 200.0 | 0.37 | -10.0 | 12 | 522.76 | 180.0 | 0.10 |
| 307 | 864.97 | 78.3 | 1.0 | 200.0 | 0.37 | -10.0 | 12 | 505.42 | 180.0 | 0.10 |
| 308 | 713.45 | 80.6 | 1.0 | 200.0 | 0.37 | -10.0 | 1 | 224.47 | 180.0 | 0.39 |
| 309 | 756.68 | 80.5 | 1.0 | 200.0 | 0.37 | -10.0 | 1 | 244.44 | 180.0 | 0.39 |
| 310 | 804.73 | 75.8 | 1.0 | 200.0 | 0.37 | -10.0 | 12 | 384.67 | 180.0 | 0.10 |
| 311 | 743.83 | 77.3 | 1.0 | 200.0 | 0.37 | -10.0 | 12 | 341.71 | 180.0 | 0.10 |
| 312 | 939.80 | 80.6 | 1.0 | 200.0 | 0.22 | -50.0 | 1 | 336.36 | 180.0 | 0.39 |
| 313 | 965.96 | 80.6 | 1.0 | 200.0 | 0.22 | -50.0 | 1 | 319.57 | 180.0 | 0.39 |
| 314 | 1108.17 | 80.6 | 1.0 | 200.0 | 0.18 | -90.0 | 1 | 361.15 | 180.0 | 0.39 |
| 315 | 1152.30 | 80.6 | 1.0 | 200.0 | 0.18 | -90.0 | 1 | 425.64 | 180.0 | 0.39 |
| 316 | 1134.77 | 80.6 | 1.0 | 200.0 | 0.18 | -90.0 | 1 | 393.30 | 180.0 | 0.39 |
| 317 | 1097.09 | 80.6 | 1.0 | 200.0 | 0.18 | -90.0 | 1 | 364.77 | 180.0 | 0.39 |
| 318 | 1068.60 | 80.6 | 1.0 | 200.0 | 0.18 | -90.0 | 1 | 345.51 | 180.0 | 0.39 |
| 319 | 825.05 | 79.4 | 1.0 | 200.0 | 0.18 | -90.0 | 8 | 284.61 | 180.0 | 0.37 |
| 320 | 712.77 | 74.0 | 1.0 | 200.0 | 0.22 | -50.0 | 1 | 210.72 | 180.0 | 0.39 |
| 321 | 701.32 | 74.0 | 1.0 | 200.0 | 0.22 | -50.0 | 12 | 232.77 | 180.0 | 0.10 |
| 322 | 808.95 | 74.0 | 1.0 | 200.0 | 0.18 | -90.0 | 12 | 378.55 | 180.0 | 0.10 |
| 323 | 848.09 | 77.8 | 1.0 | 200.0 | 0.18 | -90.0 | 1 | 228.82 | 180.0 | 0.39 |
| 324 | 873.36 | 77.3 | 1.0 | 200.0 | 0.18 | -90.0 | 12 | 262.95 | 180.0 | 0.10 |
| 325 | 997.23 | 80.3 | 1.0 | 178.3 | 0.17 | -90.0 | 8 | 218.01 | 160.5 | 0.53 |
| 326 | 869.40 | 79.4 | 1.0 | 178.3 | 0.17 | -90.0 | 8 | 200.05 | 160.5 | 0.53 |
| 327 | 897.98 | 78.3 | 1.0 | 200.0 | 0.18 | -90.0 | 1 | 232.56 | 180.0 | 0.39 |
| 328 | 944.76 | 79.9 | 1.0 | 200.0 | 0.18 | -90.0 | 1 | 259.04 | 180.0 | 0.39 |
| 329 | 986.45 | 80.3 | 1.0 | 200.0 | 0.18 | -90.0 | 1 | 284.41 | 180.0 | 0.39 |
| 330 | 1021.81 | 80.6 | 1.0 | 200.0 | 0.18 | -90.0 | 1 | 299.47 | 180.0 | 0.39 |
| 331 | 1041.44 | 80.6 | 1.0 | 200.0 | 0.18 | -90.0 | 1 | 297.68 | 180.0 | 0.39 |
| 332 | 1051.01 | 80.6 | 1.0 | 200.0 | 0.18 | -90.0 | 12 | 365.87 | 180.0 | 0.10 |
| 333 | 1070.65 | 80.6 | 1.0 | 200.0 | 0.18 | -90.0 | 12 | 526.07 | 180.0 | 0.10 |
| 334 | 1117.53 | 79.3 | 1.0 | 200.0 | 0.18 | -90.0 | 12 | 780.19 | 180.0 | 0.10 |
| 335 | 1187.30 | 74.0 | 1.0 | 200.0 | 0.18 | -90.0 | 12 | 1035.31 | 180.0 | 0.10 |
| 336 | 1157.36 | 75.8 | 1.0 | 178.3 | 0.17 | -90.0 | 12 | 978.48 | 160.5 | 0.30 |
| 337 | 1174.11 | 78.3 | 1.0 | 200.0 | 0.22 | -50.0 | 12 | 910.62 | 180.0 | 0.10 |
| 338 | 1116.28 | 76.7 | 1.0 | 178.3 | 0.21 | -50.0 | 12 | 942.82 | 160.5 | 0.30 |
| 339 | 823.56 | 80.6 | 1.0 | 200.0 | 0.37 | -10.0 | 12 | 480.20 | 180.0 | 0.10 |
| 340 | 910.14 | 80.6 | 1.0 | 200.0 | 0.37 | -10.0 | 12 | 518.34 | 180.0 | 0.10 |
| 341 | 806.19 | 77.3 | 1.0 | 200.0 | 0.37 | -10.0 | 12 | 441.10 | 180.0 | 0.10 |
| 342 | 721.01 | 80.6 | 1.0 | 200.0 | 0.37 | -10.0 | 1 | 238.81 | 180.0 | 0.39 |
| 343 | 800.90 | 74.0 | 1.0 | 200.0 | 0.37 | -10.0 | 12 | 389.31 | 180.0 | 0.10 |
| 344 | 777.23 | 76.7 | 1.0 | 200.0 | 0.37 | -10.0 | 12 | 359.87 | 180.0 | 0.10 |
| 345 | 848.79 | 80.6 | 1.0 | 200.0 | 0.22 | -50.0 | 1 | 301.92 | 180.0 | 0.39 |
| 346 | 960.93 | 80.6 | 1.0 | 200.0 | 0.22 | -50.0 | 1 | 334.13 | 180.0 | 0.39 |
| 347 | 1012.36 | 80.6 | 1.0 | 200.0 | 0.18 | -90.0 | 1 | 321.73 | 180.0 | 0.39 |
| 348 | 1149.33 | 80.6 | 1.0 | 200.0 | 0.18 | -90.0 | 1 | 432.23 | 180.0 | 0.39 |
| 349 | 1141.42 | 80.6 | 1.0 | 200.0 | 0.18 | -90.0 | 1 | 403.12 | 180.0 | 0.39 |

| | | | | | | | | | | |
|-----|---------|------|-----|-------|------|-------|----|---------|-------|------|
| 350 | 1111.84 | 80.6 | 1.0 | 200.0 | 0.18 | -90.0 | 1 | 373.13 | 180.0 | 0.39 |
| 351 | 1042.10 | 80.6 | 1.0 | 200.0 | 0.18 | -90.0 | 1 | 344.83 | 180.0 | 0.39 |
| 352 | 913.82 | 79.9 | 1.0 | 200.0 | 0.18 | -90.0 | 8 | 277.15 | 180.0 | 0.37 |
| 353 | 732.75 | 77.8 | 1.0 | 200.0 | 0.22 | -50.0 | 1 | 213.86 | 180.0 | 0.39 |
| 354 | 702.70 | 76.7 | 1.0 | 200.0 | 0.22 | -50.0 | 1 | 201.57 | 180.0 | 0.39 |
| 355 | 747.12 | 75.8 | 1.0 | 200.0 | 0.18 | -90.0 | 1 | 230.84 | 180.0 | 0.39 |
| 356 | 855.12 | 77.3 | 1.0 | 200.0 | 0.18 | -90.0 | 1 | 238.96 | 180.0 | 0.39 |
| 357 | 926.20 | 77.3 | 1.0 | 200.0 | 0.18 | -90.0 | 1 | 238.85 | 180.0 | 0.39 |
| 358 | 947.99 | 78.3 | 1.0 | 200.0 | 0.18 | -90.0 | 1 | 261.38 | 180.0 | 0.39 |
| 359 | 992.20 | 79.9 | 1.0 | 200.0 | 0.18 | -90.0 | 1 | 290.01 | 180.0 | 0.39 |
| 360 | 1043.70 | 80.6 | 1.0 | 200.0 | 0.18 | -90.0 | 1 | 318.05 | 180.0 | 0.39 |
| 361 | 1079.78 | 80.6 | 1.0 | 200.0 | 0.18 | -90.0 | 1 | 337.13 | 180.0 | 0.39 |
| 362 | 1088.37 | 80.6 | 1.0 | 200.0 | 0.18 | -90.0 | 1 | 332.35 | 180.0 | 0.39 |
| 363 | 1097.55 | 74.0 | 1.0 | 200.0 | 0.18 | -90.0 | 12 | 844.54 | 180.0 | 0.10 |
| 364 | 1171.79 | 74.0 | 1.0 | 200.0 | 0.18 | -90.0 | 12 | 977.34 | 180.0 | 0.10 |
| 365 | 1202.20 | 74.0 | 1.0 | 200.0 | 0.18 | -90.0 | 12 | 1117.48 | 180.0 | 0.10 |
| 366 | 1164.08 | 74.0 | 1.0 | 178.3 | 0.17 | -90.0 | 12 | 1113.39 | 160.5 | 0.30 |
| 367 | 1174.39 | 74.0 | 1.0 | 200.0 | 0.22 | -50.0 | 12 | 991.05 | 180.0 | 0.10 |
| 368 | 1119.06 | 74.0 | 1.0 | 200.0 | 0.22 | -50.0 | 12 | 851.03 | 180.0 | 0.10 |
| 369 | 1109.08 | 74.0 | 1.0 | 200.0 | 0.18 | -90.0 | 12 | 914.14 | 180.0 | 0.10 |
| 370 | 1182.74 | 74.0 | 1.0 | 200.0 | 0.18 | -90.0 | 12 | 881.97 | 180.0 | 0.10 |
| 371 | 1123.88 | 80.6 | 1.0 | 200.0 | 0.18 | -90.0 | 1 | 371.93 | 180.0 | 0.39 |
| 372 | 1103.24 | 80.6 | 1.0 | 200.0 | 0.18 | -90.0 | 1 | 355.81 | 180.0 | 0.39 |
| 373 | 1081.38 | 80.6 | 1.0 | 200.0 | 0.18 | -90.0 | 1 | 347.41 | 180.0 | 0.39 |
| 374 | 1045.55 | 80.6 | 1.0 | 200.0 | 0.18 | -90.0 | 1 | 328.37 | 180.0 | 0.39 |
| 375 | 930.12 | 79.4 | 1.0 | 200.0 | 0.18 | -90.0 | 1 | 286.54 | 180.0 | 0.39 |
| 376 | 900.28 | 74.0 | 1.0 | 200.0 | 0.18 | -90.0 | 12 | 465.08 | 180.0 | 0.10 |
| 377 | 899.11 | 77.3 | 1.0 | 200.0 | 0.18 | -90.0 | 12 | 264.28 | 180.0 | 0.10 |
| 378 | 942.94 | 78.3 | 1.0 | 200.0 | 0.18 | -90.0 | 1 | 265.86 | 180.0 | 0.39 |
| 379 | 987.13 | 79.4 | 1.0 | 200.0 | 0.18 | -90.0 | 1 | 291.51 | 180.0 | 0.39 |
| 380 | 1011.74 | 80.5 | 1.0 | 200.0 | 0.18 | -90.0 | 1 | 313.32 | 180.0 | 0.39 |
| 381 | 950.88 | 80.3 | 1.0 | 200.0 | 0.18 | -90.0 | 1 | 294.14 | 180.0 | 0.39 |

TABLE 9
CTSCREEN
SUMMARY OF CONCENTRATIONS
HILL # 2

TABLE 9
CTSCREEN
SUMMARY OF CONCENTRATIONS
HILL # 2

HILL #2

CTSCREEN:URC Srcs Proposed Case- Hill #2 Stable and Unstable

SUMMARY FOR ALL STABLE HOURS

| REC # | CONC UG/M**3 | WD DEG | WS M/S | SIGV M/S | SIGW M/S | DTHDZ K/M | HCRIT | <--- PEAK SOURCE ---> | | |
|----------|-----------------|-----------|-----------|-------------|-------------|--------------|-------|-----------------------|---------|-------|
| | | | | | | | | NS | SRC | CTRIB |
| 204 | 1311.82 | 29.5 | 2.0 | .30 | .04 | .035 | 141.0 | 7 | UG/M**3 | M |
| | | | | | | | | | 621.04 | 119.2 |

SUMMARY FOR ALL UNSTABLE HOURS

| REC # | CONC UG/M**3 | WD DEG | WS M/S | ZI M | W* M/S | L M | NS | <----- PEAK SOURCE -----> | | |
|----------|-----------------|-----------|-----------|---------|-----------|--------|----|---------------------------|-------|------|
| | | | | | | | | SRC | CTRIB | HPL |
| 144 | 1564.75 | 353.0 | 1.0 | 199.6 | 0.18 | -90.0 | 12 | UG/M**3 | M | |
| | | | | | | | | 512.64 | 179.7 | 0.10 |

SUMMARY FOR ALL HOURS

| REC # | CONC UG/M**3 | 3HR | | 24HR | | ANNUAL UG/M**3 |
|----------|-----------------|---------|---------|---------|--------|-------------------|
| | | UG/M**3 | 1095.33 | UG/M**3 | 234.71 | |
| 144 | 1564.75 | | | | | 46.94 |

RECEPTOR SUMMARY FOR STABLE HOURS

| REC # | CONC UG/M**3 | WD DEG | WS M/S | SIGV M/S | SIGW M/S | DTHDZ K/M | HCRIT | <--- PEAK SOURCE ---> | | |
|----------|-----------------|-----------|-----------|-------------|-------------|--------------|-------|-----------------------|-------|-------|
| | | | | | | | | NS | SRC | CTRIB |
| 1 | 87.80 | 27.8 | 1.0 | .75 | .75 | .020 | 160.9 | 12 | 33.64 | 171.7 |
| 2 | 102.55 | 31.2 | 1.0 | .75 | .75 | .035 | 170.3 | 12 | 40.35 | 150.3 |
| 3 | 144.03 | 32.5 | 1.0 | .75 | .75 | .035 | 170.3 | 12 | 38.96 | 150.3 |
| 4 | 143.62 | 32.3 | 1.0 | .75 | .75 | .035 | 170.3 | 12 | 37.95 | 150.3 |
| 5 | 156.33 | 32.3 | 1.0 | .75 | .75 | .035 | 170.3 | 12 | 36.76 | 150.3 |
| 6 | 154.59 | 31.2 | 1.0 | .75 | .75 | .035 | 170.3 | 12 | 36.17 | 150.3 |
| 7 | 153.58 | 29.5 | 1.0 | .75 | .75 | .035 | 170.3 | 12 | 36.09 | 150.3 |
| 8 | 153.48 | 27.0 | 1.0 | .75 | .75 | .035 | 170.3 | 12 | 36.54 | 150.3 |
| 9 | 154.37 | 24.3 | 1.0 | .75 | .75 | .035 | 170.3 | 12 | 37.29 | 150.3 |
| 10 | 155.95 | 19.5 | 1.0 | .75 | .75 | .035 | 170.3 | 12 | 39.55 | 150.3 |
| 11 | 158.51 | 19.5 | 1.0 | .75 | .75 | .035 | 170.3 | 12 | 39.10 | 150.3 |
| 12 | 159.94 | 13.0 | 1.0 | .75 | .75 | .035 | 170.3 | 12 | 42.91 | 150.3 |
| 13 | 161.24 | 13.0 | 1.0 | .75 | .75 | .035 | 170.3 | 12 | 42.76 | 150.3 |
| 14 | 89.42 | 24.3 | 1.0 | .75 | .75 | .035 | 170.3 | 12 | 43.75 | 150.3 |
| 15 | 106.28 | 32.5 | 1.0 | .75 | .75 | .035 | 170.3 | 12 | 41.92 | 150.3 |
| 16 | 148.65 | 32.5 | 1.0 | .75 | .75 | .035 | 170.3 | 12 | 41.09 | 150.3 |
| 17 | 148.69 | 32.5 | 1.0 | .75 | .75 | .035 | 170.3 | 12 | 39.98 | 150.3 |
| 18 | 163.66 | 32.5 | 1.0 | .75 | .75 | .035 | 170.3 | 12 | 38.78 | 150.3 |
| 19 | 161.81 | 32.5 | 1.0 | .75 | .75 | .035 | 170.3 | 12 | 37.49 | 150.3 |
| 20 | 159.96 | 31.4 | 1.0 | .75 | .75 | .035 | 170.3 | 12 | 36.82 | 150.3 |
| 21 | 158.71 | 29.7 | 1.0 | .75 | .75 | .035 | 170.3 | 12 | 36.63 | 150.3 |
| 22 | 167.62 | 3.2 | 5.0 | .30 | .30 | .020 | 9.8 | 6 | 89.36 | 27.2 |
| 23 | 158.71 | 24.3 | 1.0 | .75 | .75 | .035 | 170.3 | 12 | 37.77 | 150.3 |
| 24 | 160.25 | 24.3 | 1.0 | .75 | .75 | .035 | 170.3 | 12 | 37.06 | 150.3 |

| | | | | | | | | | | |
|----|--------|------|-----|-----|-----|------|-------|----|--------|-------|
| 25 | 162.58 | 19.5 | 1.0 | .75 | .75 | .035 | 170.3 | 12 | 39.56 | 150.3 |
| 26 | 327.63 | 32.0 | 5.0 | .30 | .15 | .035 | 53.0 | 5 | 165.73 | 27.2 |
| 27 | 352.51 | 32.0 | 5.0 | .30 | .15 | .035 | 53.0 | 5 | 177.66 | 27.2 |
| 28 | 374.05 | 32.0 | 5.0 | .30 | .15 | .035 | 53.0 | 5 | 187.79 | 27.2 |
| 29 | 395.10 | 32.0 | 5.0 | .30 | .15 | .035 | 53.0 | 5 | 197.43 | 27.2 |
| 30 | 409.23 | 32.0 | 5.0 | .30 | .15 | .035 | 53.0 | 6 | 204.72 | 27.2 |
| 31 | 410.02 | 32.0 | 5.0 | .30 | .15 | .035 | 53.0 | 6 | 205.18 | 27.2 |
| 32 | 439.58 | 31.8 | 5.0 | .30 | .15 | .035 | 53.0 | 5 | 220.85 | 27.2 |
| 33 | 455.33 | 31.8 | 5.0 | .30 | .15 | .035 | 53.0 | 5 | 227.44 | 27.2 |
| 34 | 468.22 | 31.8 | 5.0 | .30 | .15 | .035 | 53.0 | 6 | 235.21 | 27.2 |
| 35 | 477.96 | 31.8 | 5.0 | .30 | .15 | .035 | 53.0 | 6 | 241.95 | 27.2 |
| 36 | 482.46 | 31.8 | 5.0 | .30 | .15 | .035 | 53.0 | 6 | 246.01 | 27.2 |
| 37 | 485.07 | 31.4 | 5.0 | .30 | .15 | .035 | 53.0 | 5 | 246.25 | 27.2 |
| 38 | 498.87 | 31.4 | 5.0 | .30 | .15 | .035 | 53.0 | 5 | 250.90 | 27.2 |
| 39 | 478.33 | 31.9 | 4.0 | .30 | .15 | .035 | 82.3 | 5 | 238.55 | 30.9 |
| 40 | 448.58 | 31.9 | 4.0 | .30 | .15 | .035 | 82.3 | 6 | 227.46 | 30.9 |
| 41 | 397.29 | 31.3 | 4.0 | .30 | .15 | .020 | 44.9 | 5 | 197.95 | 30.9 |
| 42 | 384.85 | 31.0 | 4.0 | .30 | .15 | .035 | 82.3 | 5 | 193.42 | 30.9 |
| 43 | 370.07 | 31.0 | 4.0 | .30 | .15 | .035 | 82.3 | 5 | 184.76 | 30.9 |
| 44 | 353.31 | 31.0 | 4.0 | .30 | .15 | .035 | 82.3 | 5 | 175.41 | 30.9 |
| 45 | 336.05 | 31.0 | 4.0 | .30 | .15 | .035 | 82.3 | 6 | 166.80 | 30.9 |
| 46 | 321.23 | 31.0 | 4.0 | .30 | .15 | .035 | 82.3 | 6 | 159.59 | 30.9 |
| 47 | 302.03 | 31.0 | 4.0 | .30 | .15 | .035 | 82.3 | 6 | 150.20 | 30.9 |
| 48 | 288.11 | 30.3 | 5.0 | .30 | .15 | .035 | 53.0 | 5 | 143.67 | 27.2 |
| 49 | 275.62 | 30.3 | 5.0 | .30 | .15 | .035 | 53.0 | 5 | 136.98 | 27.2 |
| 50 | 258.07 | 30.3 | 5.0 | .30 | .15 | .035 | 53.0 | 6 | 128.27 | 27.2 |
| 51 | 242.75 | 30.3 | 5.0 | .30 | .15 | .035 | 53.0 | 6 | 120.71 | 27.2 |
| 52 | 228.22 | 30.3 | 5.0 | .30 | .15 | .035 | 53.0 | 6 | 113.46 | 27.2 |
| 53 | 215.60 | 30.3 | 5.0 | .30 | .15 | .035 | 53.0 | 6 | 107.11 | 27.2 |
| 54 | 204.89 | 30.3 | 5.0 | .30 | .15 | .035 | 53.0 | 6 | 101.68 | 27.2 |
| 55 | 195.64 | 30.3 | 5.0 | .30 | .15 | .035 | 53.0 | 6 | 96.98 | 27.2 |
| 56 | 308.69 | 33.3 | 2.0 | .30 | .04 | .035 | 141.0 | 5 | 143.05 | 46.4 |
| 57 | 322.79 | 33.3 | 2.0 | .30 | .04 | .035 | 141.0 | 5 | 149.68 | 46.4 |
| 58 | 335.05 | 33.3 | 2.0 | .30 | .04 | .035 | 141.0 | 5 | 155.40 | 46.4 |
| 59 | 346.36 | 33.3 | 2.0 | .30 | .04 | .035 | 141.0 | 6 | 161.25 | 46.4 |
| 60 | 349.48 | 33.3 | 2.0 | .30 | .04 | .035 | 141.0 | 6 | 162.87 | 46.4 |
| 61 | 351.75 | 33.3 | 2.0 | .30 | .04 | .035 | 141.0 | 6 | 164.08 | 46.4 |
| 62 | 363.53 | 33.3 | 2.0 | .30 | .04 | .035 | 141.0 | 6 | 170.62 | 46.4 |
| 63 | 367.26 | 33.3 | 2.0 | .30 | .04 | .035 | 141.0 | 6 | 172.92 | 46.4 |
| 64 | 371.30 | 32.4 | 2.0 | .30 | .04 | .035 | 141.0 | 5 | 173.30 | 46.4 |
| 65 | 380.04 | 32.4 | 2.0 | .30 | .04 | .035 | 141.0 | 5 | 177.25 | 46.4 |
| 66 | 386.70 | 32.4 | 2.0 | .30 | .04 | .035 | 141.0 | 6 | 180.72 | 46.4 |
| 67 | 390.66 | 32.4 | 2.0 | .30 | .04 | .035 | 141.0 | 6 | 183.30 | 46.4 |
| 68 | 393.08 | 32.2 | 2.0 | .30 | .04 | .035 | 141.0 | 6 | 184.49 | 46.4 |
| 69 | 392.67 | 32.2 | 2.0 | .30 | .04 | .035 | 141.0 | 6 | 185.04 | 46.4 |
| 70 | 384.01 | 31.3 | 2.0 | .30 | .04 | .035 | 141.0 | 6 | 178.92 | 46.4 |
| 71 | 370.34 | 31.3 | 2.0 | .30 | .04 | .035 | 141.0 | 6 | 173.50 | 46.4 |
| 72 | 352.08 | 31.3 | 2.0 | .30 | .04 | .035 | 141.0 | 6 | 165.68 | 46.4 |
| 73 | 331.05 | 29.9 | 2.0 | .30 | .04 | .035 | 141.0 | 5 | 153.67 | 46.4 |
| 74 | 322.73 | 29.9 | 2.0 | .30 | .04 | .035 | 141.0 | 5 | 149.48 | 46.4 |
| 75 | 312.37 | 29.9 | 2.0 | .30 | .04 | .035 | 141.0 | 6 | 144.56 | 46.4 |
| 76 | 300.62 | 29.9 | 2.0 | .30 | .04 | .035 | 141.0 | 6 | 139.37 | 46.4 |
| 77 | 287.17 | 29.9 | 2.0 | .30 | .04 | .035 | 141.0 | 6 | 133.18 | 46.4 |
| 78 | 272.99 | 29.5 | 2.0 | .30 | .04 | .035 | 141.0 | 6 | 125.77 | 46.4 |
| 79 | 259.57 | 29.5 | 2.0 | .30 | .04 | .035 | 141.0 | 6 | 119.55 | 46.4 |
| 80 | 245.83 | 29.4 | 2.0 | .30 | .04 | .035 | 141.0 | 6 | 113.00 | 46.4 |
| 81 | 234.04 | 29.2 | 2.0 | .30 | .04 | .035 | 141.0 | 6 | 107.12 | 46.4 |
| 82 | 223.78 | 29.1 | 2.0 | .30 | .04 | .035 | 141.0 | 6 | 102.19 | 46.4 |
| 83 | 214.21 | 29.1 | 2.0 | .30 | .04 | .035 | 141.0 | 6 | 97.72 | 46.4 |
| 84 | 209.03 | 29.1 | 2.0 | .30 | .04 | .035 | 141.0 | 6 | 95.42 | 46.4 |

| | | | | | | | | | | |
|-----|---------|-------|-----|-----|-----|------|-------|----|--------|-------|
| 85 | 202.42 | 29.1 | 2.0 | .30 | .04 | .035 | 141.0 | 6 | 92.43 | 46.4 |
| 86 | 206.17 | 350.2 | 4.0 | .75 | .75 | .020 | 44.9 | 8 | 47.67 | 143.8 |
| 87 | 450.04 | 33.3 | 4.0 | .30 | .15 | .035 | 82.3 | 18 | 313.98 | 71.8 |
| 88 | 455.10 | 33.3 | 4.0 | .30 | .15 | .035 | 82.3 | 18 | 324.03 | 71.8 |
| 89 | 457.10 | 33.3 | 4.0 | .30 | .15 | .035 | 82.3 | 18 | 331.10 | 71.8 |
| 90 | 451.18 | 33.3 | 4.0 | .30 | .15 | .035 | 82.3 | 18 | 327.19 | 71.8 |
| 91 | 465.86 | 32.4 | 4.0 | .30 | .15 | .035 | 82.3 | 18 | 299.33 | 71.8 |
| 92 | 473.05 | 32.4 | 4.0 | .30 | .15 | .035 | 82.3 | 18 | 308.11 | 71.8 |
| 93 | 481.11 | 32.4 | 4.0 | .30 | .15 | .035 | 82.3 | 18 | 318.54 | 71.8 |
| 94 | 489.73 | 32.4 | 4.0 | .30 | .15 | .035 | 82.3 | 18 | 330.82 | 71.8 |
| 95 | 496.49 | 32.4 | 4.0 | .30 | .15 | .035 | 82.3 | 18 | 342.10 | 71.8 |
| 96 | 500.98 | 32.4 | 4.0 | .30 | .15 | .035 | 82.3 | 18 | 352.06 | 71.8 |
| 97 | 502.73 | 32.3 | 4.0 | .30 | .15 | .035 | 82.3 | 18 | 352.28 | 71.8 |
| 98 | 503.84 | 32.3 | 4.0 | .30 | .15 | .035 | 82.3 | 18 | 359.13 | 71.8 |
| 99 | 491.35 | 31.9 | 4.0 | .30 | .15 | .035 | 82.3 | 18 | 348.44 | 71.8 |
| 100 | 482.59 | 31.9 | 4.0 | .30 | .15 | .035 | 82.3 | 18 | 350.74 | 71.8 |
| 101 | 464.65 | 31.9 | 4.0 | .30 | .15 | .035 | 82.3 | 18 | 343.92 | 71.8 |
| 102 | 444.37 | 31.0 | 4.0 | .30 | .15 | .035 | 82.3 | 18 | 281.73 | 71.8 |
| 103 | 440.83 | 31.0 | 4.0 | .30 | .15 | .035 | 82.3 | 18 | 284.29 | 71.8 |
| 104 | 432.77 | 31.0 | 4.0 | .30 | .15 | .035 | 82.3 | 18 | 282.73 | 71.8 |
| 105 | 420.50 | 31.0 | 4.0 | .30 | .15 | .035 | 82.3 | 18 | 276.99 | 71.8 |
| 106 | 409.62 | 31.0 | 4.0 | .30 | .15 | .035 | 82.3 | 18 | 270.51 | 71.8 |
| 107 | 396.21 | 31.0 | 4.0 | .30 | .15 | .035 | 82.3 | 18 | 262.39 | 71.8 |
| 108 | 380.88 | 31.0 | 4.0 | .30 | .15 | .035 | 82.3 | 18 | 252.86 | 71.8 |
| 109 | 364.00 | 31.0 | 4.0 | .30 | .15 | .035 | 82.3 | 18 | 242.01 | 71.8 |
| 110 | 352.14 | 26.8 | 2.0 | .30 | .30 | .035 | 141.0 | 18 | 106.67 | 82.5 |
| 111 | 347.73 | 26.8 | 2.0 | .30 | .30 | .035 | 141.0 | 18 | 103.77 | 82.5 |
| 112 | 343.44 | 26.8 | 2.0 | .30 | .30 | .035 | 141.0 | 18 | 100.82 | 82.5 |
| 113 | 833.24 | 32.2 | 3.0 | .30 | .08 | .035 | 111.6 | 7 | 431.04 | 110.0 |
| 114 | 847.01 | 30.9 | 3.0 | .30 | .08 | .035 | 111.6 | 7 | 422.94 | 110.0 |
| 115 | 872.72 | 30.9 | 3.0 | .30 | .08 | .035 | 111.6 | 7 | 440.89 | 110.0 |
| 116 | 898.55 | 30.9 | 3.0 | .30 | .08 | .035 | 111.6 | 7 | 458.96 | 110.0 |
| 117 | 922.01 | 30.9 | 3.0 | .30 | .08 | .035 | 111.6 | 7 | 476.84 | 110.0 |
| 118 | 944.32 | 30.9 | 3.0 | .30 | .08 | .035 | 111.6 | 7 | 494.00 | 110.0 |
| 119 | 950.52 | 30.9 | 3.0 | .30 | .08 | .035 | 111.6 | 7 | 502.74 | 110.0 |
| 120 | 935.96 | 30.9 | 3.0 | .30 | .08 | .035 | 111.6 | 7 | 507.03 | 110.0 |
| 121 | 942.60 | 30.9 | 3.0 | .30 | .08 | .035 | 111.6 | 7 | 518.49 | 110.0 |
| 122 | 974.09 | 30.9 | 3.0 | .30 | .08 | .035 | 111.6 | 7 | 530.91 | 110.0 |
| 123 | 993.76 | 30.9 | 3.0 | .30 | .08 | .035 | 111.6 | 7 | 542.87 | 110.0 |
| 124 | 1007.49 | 30.9 | 3.0 | .30 | .08 | .035 | 111.6 | 7 | 547.42 | 110.0 |
| 125 | 1010.15 | 30.9 | 3.0 | .30 | .08 | .035 | 111.6 | 7 | 551.24 | 110.0 |
| 126 | 1011.18 | 30.9 | 3.0 | .30 | .08 | .035 | 111.6 | 7 | 555.05 | 110.0 |
| 127 | 1007.25 | 30.9 | 3.0 | .30 | .08 | .035 | 111.6 | 7 | 555.48 | 110.0 |
| 128 | 1021.67 | 29.9 | 3.0 | .30 | .08 | .035 | 111.6 | 7 | 545.13 | 110.0 |
| 129 | 1034.83 | 29.9 | 3.0 | .30 | .08 | .035 | 111.6 | 7 | 557.53 | 110.0 |
| 130 | 1065.98 | 29.9 | 3.0 | .30 | .08 | .035 | 111.6 | 7 | 567.72 | 110.0 |
| 131 | 1001.74 | 29.2 | 3.0 | .30 | .08 | .035 | 111.6 | 7 | 545.83 | 110.0 |
| 132 | 974.03 | 29.1 | 3.0 | .30 | .08 | .035 | 111.6 | 7 | 536.97 | 110.0 |
| 133 | 939.41 | 28.8 | 3.0 | .30 | .08 | .035 | 111.6 | 7 | 512.51 | 110.0 |
| 134 | 904.21 | 28.8 | 3.0 | .30 | .08 | .035 | 111.6 | 7 | 494.26 | 110.0 |
| 135 | 882.60 | 28.8 | 3.0 | .30 | .08 | .035 | 111.6 | 7 | 482.12 | 110.0 |
| 136 | 871.87 | 28.0 | 3.0 | .30 | .08 | .035 | 111.6 | 7 | 456.42 | 110.0 |
| 137 | 857.64 | 28.0 | 3.0 | .30 | .08 | .035 | 111.6 | 7 | 450.14 | 110.0 |
| 138 | 840.50 | 28.0 | 3.0 | .30 | .08 | .035 | 111.6 | 7 | 442.39 | 110.0 |
| 139 | 819.71 | 28.0 | 3.0 | .30 | .08 | .035 | 111.6 | 7 | 432.69 | 110.0 |
| 140 | 801.74 | 28.0 | 3.0 | .30 | .08 | .035 | 111.6 | 7 | 424.23 | 110.0 |
| 141 | 788.03 | 28.0 | 3.0 | .30 | .08 | .035 | 111.6 | 7 | 417.78 | 110.0 |
| 142 | 761.89 | 28.0 | 3.0 | .30 | .08 | .035 | 111.6 | 7 | 404.43 | 110.0 |
| 143 | 735.61 | 28.0 | 3.0 | .30 | .08 | .035 | 111.6 | 7 | 390.61 | 110.0 |
| 144 | 716.52 | 28.0 | 3.0 | .30 | .08 | .035 | 111.6 | 7 | 378.66 | 110.0 |

| | | | | | | | | | | |
|-----|---------|-------|-----|-----|-----|------|-------|----|--------|-------|
| 145 | 731.30 | 350.2 | 4.0 | .30 | .15 | .035 | 82.3 | 12 | 582.48 | 111.6 |
| 146 | 711.87 | 28.0 | 3.0 | .30 | .08 | .035 | 111.6 | 7 | 374.71 | 110.0 |
| 147 | 683.46 | 28.0 | 3.0 | .30 | .08 | .035 | 111.6 | 7 | 359.26 | 110.0 |
| 148 | 653.45 | 28.0 | 3.0 | .30 | .08 | .035 | 111.6 | 7 | 342.93 | 110.0 |
| 149 | 630.04 | 28.0 | 3.0 | .30 | .08 | .035 | 111.6 | 7 | 331.22 | 110.0 |
| 150 | 623.37 | 28.0 | 3.0 | .30 | .08 | .035 | 111.6 | 7 | 331.04 | 110.0 |
| 151 | 1027.72 | 32.2 | 2.0 | .30 | .04 | .035 | 141.0 | 7 | 468.05 | 119.2 |
| 152 | 1047.81 | 32.2 | 2.0 | .30 | .04 | .035 | 141.0 | 7 | 480.64 | 119.2 |
| 153 | 1071.60 | 31.3 | 2.0 | .30 | .04 | .035 | 141.0 | 7 | 481.75 | 119.2 |
| 154 | 1097.14 | 31.3 | 2.0 | .30 | .04 | .035 | 141.0 | 7 | 497.40 | 119.2 |
| 155 | 1120.97 | 31.3 | 2.0 | .30 | .04 | .035 | 141.0 | 7 | 512.48 | 119.2 |
| 156 | 1140.01 | 31.3 | 2.0 | .30 | .04 | .035 | 141.0 | 7 | 525.59 | 119.2 |
| 157 | 1144.00 | 31.3 | 2.0 | .30 | .04 | .035 | 141.0 | 7 | 533.04 | 119.2 |
| 158 | 1140.92 | 31.3 | 2.0 | .30 | .04 | .035 | 141.0 | 7 | 540.26 | 119.2 |
| 159 | 1140.33 | 31.3 | 2.0 | .30 | .04 | .035 | 141.0 | 7 | 542.71 | 119.2 |
| 160 | 1161.80 | 31.3 | 2.0 | .30 | .04 | .035 | 141.0 | 7 | 558.92 | 119.2 |
| 161 | 1180.27 | 29.9 | 2.0 | .30 | .04 | .035 | 141.0 | 7 | 541.48 | 119.2 |
| 162 | 1204.28 | 29.9 | 2.0 | .30 | .04 | .035 | 141.0 | 7 | 551.80 | 119.2 |
| 163 | 1214.37 | 29.9 | 2.0 | .30 | .04 | .035 | 141.0 | 7 | 560.35 | 119.2 |
| 164 | 1223.80 | 29.9 | 2.0 | .30 | .04 | .035 | 141.0 | 7 | 571.18 | 119.2 |
| 165 | 1226.04 | 29.9 | 2.0 | .30 | .04 | .035 | 141.0 | 7 | 580.34 | 119.2 |
| 166 | 1220.57 | 29.5 | 2.0 | .30 | .04 | .035 | 141.0 | 7 | 576.13 | 119.2 |
| 167 | 1184.54 | 29.5 | 2.0 | .30 | .04 | .035 | 141.0 | 7 | 583.06 | 119.2 |
| 168 | 1187.24 | 29.4 | 2.0 | .30 | .04 | .035 | 141.0 | 7 | 588.14 | 119.2 |
| 169 | 1174.17 | 28.0 | 2.0 | .30 | .04 | .035 | 141.0 | 7 | 539.08 | 119.2 |
| 170 | 1165.88 | 28.0 | 2.0 | .30 | .04 | .035 | 141.0 | 7 | 556.24 | 119.2 |
| 171 | 1126.48 | 28.0 | 2.0 | .30 | .04 | .035 | 141.0 | 7 | 542.57 | 119.2 |
| 172 | 1110.72 | 26.8 | 2.0 | .30 | .04 | .035 | 141.0 | 7 | 502.77 | 119.2 |
| 173 | 1096.87 | 26.8 | 2.0 | .30 | .04 | .035 | 141.0 | 7 | 499.70 | 119.2 |
| 174 | 1078.86 | 26.8 | 2.0 | .30 | .04 | .035 | 141.0 | 7 | 494.79 | 119.2 |
| 175 | 1060.97 | 26.8 | 2.0 | .30 | .04 | .035 | 141.0 | 7 | 489.06 | 119.2 |
| 176 | 1045.85 | 26.8 | 2.0 | .30 | .04 | .035 | 141.0 | 7 | 483.43 | 119.2 |
| 177 | 1030.70 | 26.8 | 2.0 | .30 | .04 | .035 | 141.0 | 7 | 476.76 | 119.2 |
| 178 | 1005.89 | 26.8 | 2.0 | .30 | .04 | .035 | 141.0 | 7 | 465.51 | 119.2 |
| 179 | 974.11 | 26.8 | 2.0 | .30 | .04 | .035 | 141.0 | 7 | 451.25 | 119.2 |
| 180 | 952.15 | 26.8 | 2.0 | .30 | .04 | .035 | 141.0 | 7 | 438.78 | 119.2 |
| 181 | 950.43 | 26.8 | 2.0 | .30 | .04 | .035 | 141.0 | 7 | 440.03 | 119.2 |
| 182 | 948.01 | 26.8 | 2.0 | .30 | .04 | .035 | 141.0 | 7 | 443.07 | 119.2 |
| 183 | 917.07 | 26.8 | 2.0 | .30 | .04 | .035 | 141.0 | 7 | 431.24 | 119.2 |
| 184 | 877.14 | 26.8 | 2.0 | .30 | .04 | .035 | 141.0 | 7 | 413.35 | 119.2 |
| 185 | 840.71 | 26.8 | 2.0 | .30 | .04 | .035 | 141.0 | 7 | 396.63 | 119.2 |
| 186 | 807.53 | 22.6 | 2.0 | .30 | .04 | .035 | 141.0 | 7 | 309.60 | 119.2 |
| 187 | 799.98 | 22.6 | 2.0 | .30 | .04 | .035 | 141.0 | 7 | 309.49 | 119.2 |
| 188 | 797.13 | 22.6 | 2.0 | .30 | .04 | .035 | 141.0 | 7 | 309.41 | 119.2 |
| 189 | 794.42 | 22.6 | 2.0 | .30 | .04 | .035 | 141.0 | 7 | 309.29 | 119.2 |
| 190 | 789.60 | 22.6 | 2.0 | .30 | .04 | .035 | 141.0 | 7 | 308.93 | 119.2 |
| 191 | 1147.87 | 31.3 | 2.0 | .30 | .04 | .035 | 141.0 | 7 | 504.15 | 119.2 |
| 192 | 1172.75 | 31.3 | 2.0 | .30 | .04 | .035 | 141.0 | 7 | 522.92 | 119.2 |
| 193 | 1196.36 | 31.3 | 2.0 | .30 | .04 | .035 | 141.0 | 7 | 541.27 | 119.2 |
| 194 | 1217.57 | 31.3 | 2.0 | .30 | .04 | .035 | 141.0 | 7 | 558.29 | 119.2 |
| 195 | 1234.74 | 31.3 | 2.0 | .30 | .04 | .035 | 141.0 | 7 | 574.86 | 119.2 |
| 196 | 1243.90 | 31.3 | 2.0 | .30 | .04 | .035 | 141.0 | 7 | 587.39 | 119.2 |
| 197 | 1231.12 | 31.3 | 2.0 | .30 | .04 | .035 | 141.0 | 7 | 580.27 | 119.2 |
| 198 | 1208.92 | 31.3 | 2.0 | .30 | .04 | .035 | 141.0 | 7 | 557.51 | 119.2 |
| 199 | 1228.41 | 31.3 | 2.0 | .30 | .04 | .035 | 141.0 | 7 | 579.19 | 119.2 |
| 200 | 1245.07 | 31.3 | 2.0 | .30 | .04 | .035 | 141.0 | 7 | 602.38 | 119.2 |
| 201 | 1294.14 | 29.9 | 2.0 | .30 | .04 | .035 | 141.0 | 7 | 606.31 | 119.2 |
| 202 | 1301.39 | 29.9 | 2.0 | .30 | .04 | .035 | 141.0 | 7 | 625.74 | 119.2 |
| 203 | 1306.85 | 29.9 | 2.0 | .30 | .04 | .035 | 141.0 | 7 | 634.33 | 119.2 |
| 204 | 1311.82 | 29.5 | 2.0 | .30 | .04 | .035 | 141.0 | 7 | 621.04 | 119.2 |

| | | | | | | | | | | |
|-----|---------|------|-----|-----|-----|------|-------|----|--------|-------|
| 205 | 1310.16 | 29.4 | 2.0 | .30 | .04 | .035 | 141.0 | 7 | 629.77 | 119.2 |
| 206 | 1298.16 | 29.2 | 2.0 | .30 | .04 | .035 | 141.0 | 7 | 627.44 | 119.2 |
| 207 | 1260.13 | 29.2 | 2.0 | .30 | .04 | .035 | 141.0 | 7 | 636.60 | 119.2 |
| 208 | 1248.85 | 28.0 | 2.0 | .30 | .04 | .035 | 141.0 | 7 | 606.31 | 119.2 |
| 209 | 1262.46 | 28.0 | 2.0 | .30 | .04 | .035 | 141.0 | 7 | 606.00 | 119.2 |
| 210 | 1252.85 | 28.0 | 2.0 | .30 | .04 | .035 | 141.0 | 7 | 624.82 | 119.2 |
| 211 | 1244.44 | 26.8 | 2.0 | .30 | .04 | .035 | 141.0 | 7 | 565.73 | 119.2 |
| 212 | 1223.81 | 26.8 | 2.0 | .30 | .04 | .035 | 141.0 | 7 | 564.26 | 119.2 |
| 213 | 1204.77 | 26.8 | 2.0 | .30 | .04 | .035 | 141.0 | 7 | 560.05 | 119.2 |
| 214 | 1175.04 | 26.8 | 2.0 | .30 | .04 | .035 | 141.0 | 7 | 550.27 | 119.2 |
| 215 | 1170.17 | 26.8 | 2.0 | .30 | .04 | .035 | 141.0 | 7 | 546.17 | 119.2 |
| 216 | 1158.58 | 26.8 | 2.0 | .30 | .04 | .035 | 141.0 | 7 | 537.02 | 119.2 |
| 217 | 1122.36 | 26.8 | 2.0 | .30 | .04 | .035 | 141.0 | 7 | 519.73 | 119.2 |
| 218 | 1096.41 | 26.8 | 2.0 | .30 | .04 | .035 | 141.0 | 7 | 511.00 | 119.2 |
| 219 | 1078.37 | 26.8 | 2.0 | .30 | .04 | .035 | 141.0 | 7 | 508.10 | 119.2 |
| 220 | 1080.81 | 26.8 | 2.0 | .30 | .04 | .035 | 141.0 | 7 | 517.11 | 119.2 |
| 221 | 1056.22 | 26.8 | 2.0 | .30 | .04 | .035 | 141.0 | 7 | 513.22 | 119.2 |
| 222 | 1020.77 | 26.8 | 2.0 | .30 | .04 | .035 | 141.0 | 7 | 500.20 | 119.2 |
| 223 | 984.07 | 22.6 | 2.0 | .30 | .04 | .035 | 141.0 | 8 | 440.41 | 148.3 |
| 224 | 976.91 | 22.6 | 2.0 | .30 | .04 | .035 | 141.0 | 8 | 434.59 | 148.3 |
| 225 | 968.11 | 22.6 | 2.0 | .30 | .04 | .035 | 141.0 | 8 | 428.43 | 148.3 |
| 226 | 960.94 | 22.6 | 2.0 | .30 | .04 | .035 | 141.0 | 8 | 424.87 | 148.3 |
| 227 | 958.77 | 22.6 | 2.0 | .30 | .04 | .035 | 141.0 | 8 | 424.13 | 148.3 |
| 228 | 954.67 | 22.6 | 2.0 | .30 | .04 | .035 | 141.0 | 8 | 421.83 | 148.3 |
| 229 | 948.12 | 22.6 | 2.0 | .30 | .04 | .035 | 141.0 | 8 | 418.22 | 148.3 |
| 230 | 939.82 | 22.6 | 2.0 | .30 | .04 | .035 | 141.0 | 8 | 413.70 | 148.3 |
| 231 | 1034.76 | 32.5 | 1.0 | .30 | .04 | .035 | 170.3 | 12 | 364.57 | 150.3 |
| 232 | 1050.93 | 32.5 | 1.0 | .30 | .04 | .035 | 170.3 | 12 | 360.89 | 150.3 |
| 233 | 1066.81 | 32.5 | 1.0 | .30 | .04 | .035 | 170.3 | 12 | 354.52 | 150.3 |
| 234 | 1080.33 | 32.5 | 1.0 | .30 | .04 | .035 | 170.3 | 12 | 344.48 | 150.3 |
| 235 | 1093.79 | 29.9 | 2.0 | .30 | .04 | .035 | 141.0 | 8 | 558.79 | 148.3 |
| 236 | 1122.09 | 29.9 | 2.0 | .30 | .04 | .035 | 141.0 | 8 | 582.66 | 148.3 |
| 237 | 1095.05 | 29.9 | 2.0 | .30 | .04 | .035 | 141.0 | 8 | 581.02 | 148.3 |
| 238 | 1086.26 | 29.9 | 2.0 | .30 | .04 | .035 | 141.0 | 8 | 576.91 | 148.3 |
| 239 | 1096.18 | 29.9 | 2.0 | .30 | .04 | .035 | 141.0 | 8 | 587.10 | 148.3 |
| 240 | 1132.26 | 29.9 | 2.0 | .30 | .04 | .035 | 141.0 | 8 | 617.54 | 148.3 |
| 241 | 1186.74 | 29.9 | 2.0 | .30 | .04 | .035 | 141.0 | 8 | 662.27 | 148.3 |
| 242 | 1247.80 | 29.2 | 2.0 | .30 | .04 | .035 | 141.0 | 8 | 719.90 | 148.3 |
| 243 | 1239.88 | 29.1 | 2.0 | .30 | .04 | .035 | 141.0 | 8 | 731.40 | 148.3 |
| 244 | 1234.86 | 29.1 | 2.0 | .30 | .04 | .035 | 141.0 | 8 | 726.33 | 148.3 |
| 245 | 1234.40 | 28.0 | 2.0 | .30 | .04 | .035 | 141.0 | 8 | 754.56 | 148.3 |
| 246 | 1214.00 | 28.0 | 2.0 | .30 | .04 | .035 | 141.0 | 8 | 746.69 | 148.3 |
| 247 | 1107.36 | 28.0 | 2.0 | .30 | .04 | .035 | 141.0 | 8 | 707.99 | 148.3 |
| 248 | 1216.61 | 26.8 | 2.0 | .30 | .04 | .035 | 141.0 | 8 | 737.59 | 148.3 |
| 249 | 1208.19 | 26.8 | 2.0 | .30 | .04 | .035 | 141.0 | 8 | 730.21 | 148.3 |
| 250 | 1195.27 | 26.8 | 2.0 | .30 | .04 | .035 | 141.0 | 8 | 706.91 | 148.3 |
| 251 | 1155.02 | 26.8 | 2.0 | .30 | .04 | .035 | 141.0 | 8 | 679.49 | 148.3 |
| 252 | 1109.57 | 26.8 | 2.0 | .30 | .04 | .035 | 141.0 | 8 | 652.50 | 148.3 |
| 253 | 1082.13 | 26.8 | 2.0 | .30 | .04 | .035 | 141.0 | 8 | 637.77 | 148.3 |
| 254 | 1060.74 | 26.8 | 2.0 | .30 | .04 | .035 | 141.0 | 8 | 629.95 | 148.3 |
| 255 | 1051.85 | 24.3 | 1.0 | .30 | .04 | .035 | 170.3 | 7 | 405.99 | 138.4 |
| 256 | 1050.60 | 24.3 | 1.0 | .30 | .04 | .035 | 170.3 | 7 | 408.35 | 138.4 |
| 257 | 1052.82 | 24.3 | 1.0 | .30 | .04 | .035 | 170.3 | 7 | 408.84 | 138.4 |
| 258 | 1054.84 | 24.3 | 1.0 | .30 | .04 | .035 | 170.3 | 7 | 408.23 | 138.4 |
| 259 | 1051.98 | 24.3 | 1.0 | .30 | .04 | .035 | 170.3 | 7 | 408.32 | 138.4 |
| 260 | 1032.31 | 24.3 | 1.0 | .30 | .04 | .035 | 170.3 | 7 | 406.39 | 138.4 |
| 261 | 996.21 | 24.3 | 1.0 | .30 | .04 | .035 | 170.3 | 7 | 398.32 | 138.4 |
| 262 | 979.85 | 19.5 | 1.0 | .30 | .04 | .035 | 170.3 | 7 | 305.54 | 138.4 |
| 263 | 966.52 | 19.5 | 1.0 | .30 | .04 | .035 | 170.3 | 7 | 308.76 | 138.4 |
| 264 | 947.72 | 19.5 | 1.0 | .30 | .04 | .035 | 170.3 | 7 | 310.70 | 138.4 |

| | | | | | | | | | | |
|-----|---------|-------|-----|-----|-----|------|-------|----|--------|-------|
| 265 | 937.41 | 13.0 | 1.0 | .30 | .04 | .035 | 170.3 | 12 | 359.10 | 150.3 |
| 266 | 934.19 | 13.0 | 1.0 | .30 | .04 | .035 | 170.3 | 12 | 354.95 | 150.3 |
| 267 | 931.12 | 13.0 | 1.0 | .30 | .04 | .035 | 170.3 | 12 | 349.90 | 150.3 |
| 268 | 927.44 | 8.9 | 1.0 | .30 | .04 | .035 | 170.3 | 12 | 425.93 | 150.3 |
| 269 | 925.81 | 8.9 | 1.0 | .30 | .04 | .035 | 170.3 | 12 | 419.31 | 150.3 |
| 270 | 1080.63 | 32.5 | 1.0 | .30 | .04 | .035 | 170.3 | 12 | 388.55 | 150.3 |
| 271 | 1095.19 | 32.5 | 1.0 | .30 | .04 | .035 | 170.3 | 12 | 384.09 | 150.3 |
| 272 | 1109.48 | 32.5 | 1.0 | .30 | .04 | .035 | 170.3 | 12 | 376.46 | 150.3 |
| 273 | 1120.85 | 32.3 | 1.0 | .30 | .04 | .035 | 170.3 | 12 | 368.66 | 150.3 |
| 274 | 1126.85 | 32.3 | 1.0 | .30 | .04 | .035 | 170.3 | 12 | 359.03 | 150.3 |
| 275 | 1124.35 | 31.4 | 1.0 | .30 | .04 | .035 | 170.3 | 12 | 371.18 | 150.3 |
| 276 | 1104.21 | 30.7 | 1.0 | .30 | .04 | .035 | 170.3 | 12 | 381.85 | 150.3 |
| 277 | 1088.53 | 29.8 | 1.0 | .30 | .04 | .035 | 170.3 | 12 | 388.23 | 150.3 |
| 278 | 916.31 | 13.0 | 1.0 | .30 | .04 | .035 | 170.3 | 12 | 517.75 | 150.3 |
| 279 | 939.41 | 13.0 | 1.0 | .30 | .04 | .035 | 170.3 | 12 | 538.76 | 150.3 |
| 280 | 965.45 | 13.0 | 1.0 | .30 | .04 | .035 | 170.3 | 12 | 566.56 | 150.3 |
| 281 | 997.82 | 30.7 | 1.0 | .30 | .04 | .035 | 170.3 | 7 | 327.04 | 138.4 |
| 282 | 1057.62 | 29.8 | 1.0 | .30 | .04 | .035 | 170.3 | 7 | 354.52 | 138.4 |
| 283 | 1130.48 | 1.5 | 2.0 | .30 | .04 | .035 | 141.0 | 1 | 639.61 | 157.6 |
| 284 | 1114.60 | 27.0 | 1.0 | .30 | .04 | .035 | 170.3 | 7 | 380.16 | 138.4 |
| 285 | 1145.67 | 350.2 | 2.0 | .30 | .04 | .035 | 141.0 | 1 | 540.57 | 157.6 |
| 286 | 1177.48 | 350.2 | 2.0 | .30 | .04 | .035 | 141.0 | 8 | 526.81 | 148.3 |
| 287 | 1094.49 | 26.9 | 1.0 | .30 | .04 | .035 | 170.3 | 7 | 386.85 | 138.4 |
| 288 | 1082.36 | 26.9 | 1.0 | .30 | .04 | .035 | 170.3 | 7 | 389.74 | 138.4 |
| 289 | 1080.51 | 24.3 | 1.0 | .30 | .04 | .035 | 170.3 | 7 | 332.61 | 138.4 |
| 290 | 1083.02 | 24.3 | 1.0 | .30 | .04 | .035 | 170.3 | 7 | 337.98 | 138.4 |
| 291 | 1085.02 | 24.3 | 1.0 | .30 | .04 | .035 | 170.3 | 7 | 342.93 | 138.4 |
| 292 | 1088.08 | 24.3 | 1.0 | .30 | .04 | .035 | 170.3 | 7 | 345.03 | 138.4 |
| 293 | 1080.29 | 24.3 | 1.0 | .30 | .04 | .035 | 170.3 | 7 | 344.41 | 138.4 |
| 294 | 1100.90 | 24.3 | 1.0 | .30 | .04 | .035 | 170.3 | 7 | 344.04 | 138.4 |
| 295 | 1082.65 | 24.3 | 1.0 | .30 | .04 | .035 | 170.3 | 7 | 345.14 | 138.4 |
| 296 | 1043.14 | 24.3 | 1.0 | .30 | .04 | .035 | 170.3 | 7 | 342.18 | 138.4 |
| 297 | 1025.17 | 19.5 | 1.0 | .30 | .04 | .035 | 170.3 | 12 | 285.63 | 150.3 |
| 298 | 1013.32 | 19.5 | 1.0 | .30 | .04 | .035 | 170.3 | 12 | 268.00 | 150.3 |
| 299 | 1000.99 | 13.0 | 1.0 | .30 | .04 | .035 | 170.3 | 12 | 409.90 | 150.3 |
| 300 | 1000.42 | 8.9 | 1.0 | .30 | .04 | .035 | 170.3 | 12 | 476.86 | 150.3 |
| 301 | 994.38 | 8.9 | 1.0 | .30 | .04 | .035 | 170.3 | 12 | 464.89 | 150.3 |
| 302 | 992.53 | 8.9 | 1.0 | .30 | .04 | .035 | 170.3 | 12 | 460.48 | 150.3 |
| 303 | 990.49 | 8.9 | 1.0 | .30 | .04 | .035 | 170.3 | 12 | 455.56 | 150.3 |
| 304 | 988.72 | 8.9 | 1.0 | .30 | .04 | .035 | 170.3 | 12 | 449.81 | 150.3 |
| 305 | 986.73 | 8.9 | 1.0 | .30 | .04 | .035 | 170.3 | 12 | 444.08 | 150.3 |
| 306 | 985.67 | 8.9 | 1.0 | .30 | .04 | .035 | 170.3 | 12 | 441.07 | 150.3 |
| 307 | 982.26 | 13.0 | 1.0 | .30 | .04 | .035 | 170.3 | 12 | 361.36 | 150.3 |
| 308 | 782.62 | 24.3 | 1.0 | .30 | .04 | .035 | 170.3 | 7 | 305.18 | 138.4 |
| 309 | 1124.40 | 26.9 | 1.0 | .30 | .04 | .035 | 170.3 | 12 | 438.41 | 150.3 |
| 310 | 1019.01 | 32.5 | 1.0 | .30 | .04 | .035 | 170.3 | 12 | 391.33 | 150.3 |
| 311 | 826.27 | 32.9 | 1.0 | .30 | .15 | .020 | 160.9 | 12 | 264.12 | 171.7 |
| 312 | 832.24 | 32.9 | 1.0 | .30 | .15 | .020 | 160.9 | 12 | 264.01 | 171.7 |
| 313 | 834.88 | 32.9 | 1.0 | .30 | .15 | .020 | 160.9 | 12 | 269.20 | 171.7 |
| 314 | 816.49 | 31.2 | 1.0 | .30 | .15 | .020 | 160.9 | 12 | 246.60 | 171.7 |
| 315 | 838.33 | 29.8 | 1.0 | .30 | .04 | .035 | 170.3 | 1 | 270.58 | 180.8 |
| 316 | 898.89 | 27.0 | 1.0 | .30 | .04 | .035 | 170.3 | 1 | 299.75 | 180.8 |
| 317 | 814.05 | 19.0 | 1.0 | .30 | .15 | .020 | 160.9 | 12 | 258.31 | 171.7 |
| 318 | 859.76 | 13.8 | 1.0 | .30 | .15 | .020 | 160.9 | 12 | 294.56 | 171.7 |
| 319 | 863.25 | 19.0 | 1.0 | .30 | .15 | .020 | 160.9 | 12 | 265.59 | 171.7 |
| 320 | 865.36 | 19.0 | 1.0 | .30 | .15 | .020 | 160.9 | 12 | 277.25 | 171.7 |
| 321 | 853.51 | 19.0 | 1.0 | .30 | .15 | .020 | 160.9 | 12 | 267.73 | 171.7 |
| 322 | 837.02 | 13.8 | 1.0 | .30 | .15 | .020 | 160.9 | 12 | 301.61 | 171.7 |
| 323 | 811.12 | 13.8 | 1.0 | .30 | .15 | .020 | 160.9 | 12 | 279.05 | 171.7 |
| 324 | 806.34 | 13.8 | 1.0 | .30 | .15 | .020 | 160.9 | 12 | 291.68 | 171.7 |

| | | | | | | | | | | |
|-----|--------|------|-----|-----|-----|------|-------|----|--------|-------|
| 325 | 811.70 | 19.0 | 1.0 | .30 | .15 | .020 | 160.9 | 12 | 263.88 | 171.7 |
| 326 | 809.91 | 19.0 | 1.0 | .30 | .15 | .020 | 160.9 | 12 | 282.81 | 171.7 |
| 327 | 818.36 | 25.6 | 1.0 | .30 | .15 | .020 | 160.9 | 12 | 279.29 | 171.7 |
| 328 | 738.70 | 25.6 | 1.0 | .30 | .04 | .020 | 160.9 | 12 | 272.24 | 171.7 |
| 329 | 770.70 | 27.9 | 1.0 | .30 | .04 | .035 | 170.3 | 1 | 293.99 | 180.8 |
| 330 | 805.13 | 24.3 | 1.0 | .30 | .04 | .035 | 170.3 | 1 | 307.96 | 180.8 |
| 331 | 824.81 | 19.5 | 1.0 | .30 | .04 | .035 | 170.3 | 1 | 311.92 | 180.8 |
| 332 | 764.41 | 19.0 | 1.0 | .30 | .04 | .020 | 160.9 | 12 | 289.35 | 171.7 |
| 333 | 733.13 | 19.0 | 1.0 | .30 | .04 | .020 | 160.9 | 12 | 279.23 | 171.7 |

RECEPTOR SUMMARY FOR UNSTABLE HOURS

| REC # | CONC UG/M**3 | WD DEG | WS M/S | ZI M | W* M/S | L M | <----- PEAK SOURCE -----> | | | |
|----------|-----------------|-----------|-----------|---------|-----------|--------|---------------------------|----------------|-------|----------|
| | | | | | | | NS UG/M**3 | SRC UG/M**3 | CTRIB | HPL M |
| 1 | 525.17 | 32.2 | 2.0 | 99.8 | 0.70 | -90.0 | 6 | 246.74 | 31.5 | 0.00 |
| 2 | 520.02 | 13.9 | 2.0 | 199.6 | 1.84 | -10.0 | 12 | 465.96 | 179.7 | 0.00 |
| 3 | 463.63 | 3.2 | 2.0 | 199.6 | 1.84 | -10.0 | 12 | 420.11 | 179.7 | 0.00 |
| 4 | 532.93 | 34.9 | 1.0 | 199.6 | 1.84 | -10.0 | 1 | 173.38 | 179.7 | 0.39 |
| 5 | 630.33 | 34.9 | 1.0 | 199.6 | 1.84 | -10.0 | 1 | 167.00 | 179.7 | 0.39 |
| 6 | 661.30 | 25.3 | 1.0 | 199.6 | 1.84 | -10.0 | 8 | 166.45 | 179.7 | 0.37 |
| 7 | 732.49 | 3.2 | 1.0 | 199.6 | 1.10 | -10.0 | 8 | 253.66 | 179.7 | 0.37 |
| 8 | 751.32 | 353.0 | 1.0 | 199.6 | 0.89 | -90.0 | 8 | 250.52 | 179.7 | 0.37 |
| 9 | 654.25 | 353.0 | 1.0 | 199.6 | 0.89 | -90.0 | 8 | 194.02 | 179.7 | 0.37 |
| 10 | 564.99 | 32.2 | 2.0 | 99.8 | 0.70 | -90.0 | 6 | 272.36 | 31.5 | 0.00 |
| 11 | 560.95 | 32.2 | 2.0 | 99.8 | 0.85 | -50.0 | 6 | 260.79 | 31.5 | 0.00 |
| 12 | 565.00 | 32.2 | 2.0 | 99.8 | 1.46 | -10.0 | 6 | 194.56 | 31.5 | 0.00 |
| 13 | 696.10 | 32.2 | 1.0 | 99.8 | 1.46 | -10.0 | 5 | 265.93 | 46.3 | 0.00 |
| 14 | 429.33 | 34.9 | 1.0 | 199.6 | 0.89 | -90.0 | 12 | 389.88 | 179.7 | 0.10 |
| 15 | 464.94 | 34.9 | 2.0 | 199.6 | 1.84 | -10.0 | 12 | 391.72 | 179.7 | 0.00 |
| 16 | 490.03 | 34.9 | 1.0 | 199.6 | 0.89 | -90.0 | 12 | 317.97 | 179.7 | 0.10 |
| 17 | 589.98 | 34.9 | 1.0 | 199.6 | 1.08 | -50.0 | 12 | 198.91 | 179.7 | 0.10 |
| 18 | 670.38 | 34.9 | 1.0 | 199.6 | 1.08 | -50.0 | 1 | 206.59 | 179.7 | 0.39 |
| 19 | 707.49 | 31.5 | 1.0 | 199.6 | 1.10 | -10.0 | 8 | 229.64 | 179.7 | 0.37 |
| 20 | 746.02 | 23.2 | 1.0 | 199.6 | 1.10 | -10.0 | 8 | 254.10 | 179.7 | 0.37 |
| 21 | 760.22 | 12.9 | 1.0 | 199.6 | 1.08 | -50.0 | 8 | 246.23 | 179.7 | 0.37 |
| 22 | 803.53 | 353.0 | 1.0 | 199.6 | 0.89 | -90.0 | 8 | 259.65 | 179.7 | 0.37 |
| 23 | 762.90 | 353.0 | 1.0 | 199.6 | 0.65 | -50.0 | 8 | 243.19 | 179.7 | 0.37 |
| 24 | 629.74 | 353.0 | 1.0 | 199.6 | 0.65 | -50.0 | 8 | 181.05 | 179.7 | 0.37 |
| 25 | 455.16 | 32.2 | 2.0 | 99.8 | 0.70 | -90.0 | 6 | 205.07 | 31.5 | 0.00 |
| 26 | 455.44 | 34.9 | 1.0 | 199.6 | 0.22 | -50.0 | 12 | 406.56 | 179.7 | 0.10 |
| 27 | 468.87 | 34.9 | 1.0 | 199.6 | 0.37 | -10.0 | 12 | 299.63 | 179.7 | 0.10 |
| 28 | 542.28 | 34.9 | 1.0 | 199.6 | 0.37 | -10.0 | 12 | 333.74 | 179.7 | 0.10 |
| 29 | 609.24 | 34.9 | 1.0 | 199.6 | 0.37 | -10.0 | 12 | 341.08 | 179.7 | 0.10 |
| 30 | 627.52 | 34.9 | 1.0 | 199.6 | 0.37 | -10.0 | 12 | 285.69 | 179.7 | 0.10 |
| 31 | 608.65 | 34.9 | 1.0 | 199.6 | 0.37 | -10.0 | 1 | 197.60 | 179.7 | 0.39 |
| 32 | 657.36 | 34.9 | 1.0 | 199.6 | 0.53 | -90.0 | 1 | 205.22 | 179.7 | 0.39 |
| 33 | 640.59 | 34.9 | 1.0 | 199.6 | 0.65 | -50.0 | 1 | 200.11 | 179.7 | 0.39 |
| 34 | 601.66 | 34.9 | 1.0 | 199.6 | 0.65 | -50.0 | 12 | 205.23 | 179.7 | 0.10 |
| 35 | 656.60 | 34.9 | 1.0 | 199.6 | 0.89 | -90.0 | 1 | 206.08 | 179.7 | 0.39 |
| 36 | 696.63 | 34.9 | 1.0 | 199.6 | 0.89 | -90.0 | 8 | 222.97 | 179.7 | 0.37 |
| 37 | 764.78 | 25.3 | 1.0 | 199.6 | 0.89 | -90.0 | 8 | 247.43 | 179.7 | 0.37 |
| 38 | 793.25 | 13.9 | 1.0 | 199.6 | 0.89 | -90.0 | 8 | 264.77 | 179.7 | 0.37 |
| 39 | 807.70 | 3.2 | 1.0 | 199.6 | 0.89 | -90.0 | 8 | 253.38 | 179.7 | 0.37 |
| 40 | 877.89 | 353.0 | 1.0 | 199.6 | 0.65 | -50.0 | 8 | 287.96 | 179.7 | 0.37 |
| 41 | 824.72 | 353.0 | 1.0 | 199.6 | 0.65 | -50.0 | 8 | 235.63 | 179.7 | 0.37 |
| 42 | 650.10 | 353.0 | 1.0 | 199.6 | 0.53 | -90.0 | 8 | 182.13 | 179.7 | 0.37 |
| 43 | 430.46 | 353.0 | 1.0 | 199.6 | 0.53 | -90.0 | 7 | 123.40 | 179.7 | 0.00 |

| | | | | | | | | | | |
|-----|---------|-------|-----|-------|------|-------|----|--------|-------|------|
| 44 | 363.83 | 32.2 | 2.0 | 99.8 | 0.70 | -90.0 | 6 | 136.03 | 31.5 | 0.00 |
| 45 | 377.79 | 32.2 | 2.0 | 99.8 | 0.70 | -90.0 | 6 | 148.88 | 31.5 | 0.00 |
| 46 | 404.96 | 32.2 | 2.0 | 99.8 | 0.70 | -90.0 | 6 | 170.79 | 31.5 | 0.00 |
| 47 | 413.13 | 32.2 | 2.0 | 99.8 | 0.70 | -90.0 | 6 | 176.78 | 31.5 | 0.00 |
| 48 | 406.31 | 32.2 | 2.0 | 99.8 | 0.70 | -90.0 | 6 | 171.79 | 31.5 | 0.00 |
| 49 | 381.69 | 32.2 | 2.0 | 99.8 | 0.70 | -90.0 | 6 | 152.26 | 31.5 | 0.00 |
| 50 | 330.69 | 32.2 | 2.0 | 99.8 | 0.70 | -90.0 | 6 | 95.51 | 31.5 | 0.00 |
| 51 | 303.32 | 29.2 | 1.0 | 99.8 | 0.29 | -10.0 | 18 | 101.76 | 89.8 | 0.50 |
| 52 | 296.00 | 30.5 | 1.0 | 99.8 | 0.29 | -10.0 | 18 | 89.64 | 89.8 | 0.50 |
| 53 | 262.14 | 31.5 | 2.0 | 99.8 | 0.42 | -90.0 | 18 | 89.72 | 89.8 | 0.23 |
| 54 | 271.18 | 29.2 | 1.0 | 99.8 | 0.17 | -50.0 | 18 | 104.94 | 89.8 | 0.50 |
| 55 | 312.76 | 29.7 | 1.0 | 99.8 | 0.17 | -50.0 | 18 | 113.99 | 89.8 | 0.50 |
| 56 | 464.75 | 34.5 | 1.0 | 199.6 | 0.22 | -50.0 | 12 | 408.36 | 179.7 | 0.10 |
| 57 | 502.90 | 34.9 | 1.0 | 199.6 | 0.37 | -10.0 | 12 | 291.64 | 179.7 | 0.10 |
| 58 | 575.24 | 34.9 | 1.0 | 199.6 | 0.37 | -10.0 | 12 | 310.20 | 179.7 | 0.10 |
| 59 | 646.07 | 34.9 | 1.0 | 199.6 | 0.37 | -10.0 | 12 | 277.16 | 179.7 | 0.10 |
| 60 | 714.10 | 34.9 | 1.0 | 199.6 | 0.37 | -10.0 | 1 | 235.07 | 179.7 | 0.39 |
| 61 | 738.34 | 34.9 | 1.0 | 199.6 | 0.37 | -10.0 | 1 | 236.46 | 179.7 | 0.39 |
| 62 | 638.48 | 34.9 | 1.0 | 199.6 | 0.53 | -90.0 | 1 | 190.56 | 179.7 | 0.39 |
| 63 | 693.87 | 34.9 | 1.0 | 199.6 | 0.53 | -90.0 | 1 | 223.06 | 179.7 | 0.39 |
| 64 | 689.68 | 34.9 | 1.0 | 199.6 | 0.65 | -50.0 | 1 | 219.97 | 179.7 | 0.39 |
| 65 | 651.92 | 34.9 | 1.0 | 199.6 | 0.89 | -90.0 | 1 | 205.68 | 179.7 | 0.39 |
| 66 | 730.97 | 32.2 | 1.0 | 199.6 | 0.89 | -90.0 | 8 | 216.45 | 179.7 | 0.37 |
| 67 | 769.39 | 23.2 | 1.0 | 199.6 | 0.89 | -90.0 | 8 | 239.87 | 179.7 | 0.37 |
| 68 | 796.28 | 13.9 | 1.0 | 199.6 | 0.89 | -90.0 | 8 | 250.26 | 179.7 | 0.37 |
| 69 | 839.37 | 353.0 | 1.0 | 199.6 | 0.65 | -50.0 | 8 | 259.08 | 179.7 | 0.37 |
| 70 | 915.45 | 353.0 | 1.0 | 199.6 | 0.65 | -50.0 | 8 | 279.98 | 179.7 | 0.37 |
| 71 | 862.86 | 353.0 | 1.0 | 199.6 | 0.53 | -90.0 | 8 | 262.44 | 179.7 | 0.37 |
| 72 | 650.69 | 353.0 | 1.0 | 199.6 | 0.53 | -90.0 | 7 | 181.28 | 179.7 | 0.00 |
| 73 | 434.83 | 353.0 | 1.0 | 199.6 | 0.53 | -90.0 | 7 | 130.80 | 179.7 | 0.00 |
| 74 | 341.75 | 32.2 | 2.0 | 99.8 | 0.70 | -90.0 | 6 | 112.91 | 31.5 | 0.00 |
| 75 | 347.66 | 32.2 | 2.0 | 99.8 | 0.70 | -90.0 | 6 | 119.41 | 31.5 | 0.00 |
| 76 | 352.46 | 32.2 | 2.0 | 99.8 | 0.70 | -90.0 | 6 | 124.57 | 31.5 | 0.00 |
| 77 | 355.11 | 32.2 | 2.0 | 99.8 | 0.70 | -90.0 | 6 | 127.33 | 31.5 | 0.00 |
| 78 | 344.46 | 32.2 | 2.0 | 99.8 | 0.70 | -90.0 | 6 | 115.91 | 31.5 | 0.00 |
| 79 | 323.11 | 32.2 | 2.0 | 99.8 | 0.70 | -90.0 | 18 | 85.55 | 89.8 | 0.23 |
| 80 | 308.75 | 29.7 | 1.0 | 99.8 | 0.29 | -10.0 | 18 | 104.21 | 89.8 | 0.50 |
| 81 | 288.27 | 30.5 | 1.0 | 99.8 | 0.29 | -10.0 | 18 | 86.13 | 89.8 | 0.50 |
| 82 | 262.90 | 31.5 | 2.0 | 99.8 | 0.42 | -90.0 | 18 | 89.59 | 89.8 | 0.23 |
| 83 | 278.52 | 29.2 | 1.0 | 99.8 | 0.17 | -50.0 | 18 | 106.08 | 89.8 | 0.50 |
| 84 | 512.78 | 353.0 | 1.0 | 199.6 | 0.22 | -50.0 | 7 | 170.42 | 179.7 | 0.00 |
| 85 | 987.78 | 353.0 | 1.0 | 199.6 | 0.18 | -90.0 | 7 | 299.90 | 179.7 | 0.00 |
| 86 | 1389.24 | 353.0 | 1.0 | 199.6 | 0.18 | -90.0 | 8 | 443.07 | 179.7 | 0.37 |
| 87 | 575.71 | 34.9 | 1.0 | 199.6 | 0.37 | -10.0 | 12 | 256.08 | 179.7 | 0.10 |
| 88 | 659.53 | 34.9 | 1.0 | 199.6 | 0.37 | -10.0 | 12 | 208.95 | 179.7 | 0.10 |
| 89 | 738.50 | 34.9 | 1.0 | 199.6 | 0.37 | -10.0 | 1 | 224.97 | 179.7 | 0.39 |
| 90 | 793.22 | 32.6 | 1.0 | 199.6 | 0.37 | -10.0 | 8 | 241.67 | 179.7 | 0.37 |
| 91 | 754.59 | 34.9 | 1.0 | 199.6 | 0.37 | -10.0 | 8 | 240.66 | 179.7 | 0.37 |
| 92 | 693.46 | 34.9 | 1.0 | 199.6 | 0.53 | -90.0 | 1 | 206.62 | 179.7 | 0.39 |
| 93 | 717.53 | 34.9 | 1.0 | 199.6 | 0.53 | -90.0 | 1 | 219.90 | 179.7 | 0.39 |
| 94 | 738.26 | 34.7 | 1.0 | 199.6 | 0.65 | -50.0 | 8 | 222.08 | 179.7 | 0.37 |
| 95 | 695.38 | 29.7 | 1.0 | 199.6 | 0.65 | -50.0 | 8 | 236.04 | 179.7 | 0.37 |
| 96 | 721.40 | 13.9 | 1.0 | 199.6 | 0.65 | -50.0 | 8 | 209.72 | 179.7 | 0.37 |
| 97 | 835.82 | 3.2 | 1.0 | 199.6 | 0.65 | -50.0 | 8 | 258.84 | 179.7 | 0.37 |
| 98 | 895.99 | 3.2 | 1.0 | 199.6 | 0.65 | -50.0 | 8 | 281.03 | 179.7 | 0.37 |
| 99 | 1007.70 | 353.0 | 1.0 | 199.6 | 0.53 | -90.0 | 8 | 316.18 | 179.7 | 0.37 |
| 100 | 895.07 | 353.0 | 1.0 | 199.6 | 0.53 | -90.0 | 8 | 255.42 | 179.7 | 0.37 |
| 101 | 658.44 | 353.0 | 1.0 | 199.6 | 0.53 | -90.0 | 7 | 197.98 | 179.7 | 0.00 |
| 102 | 437.76 | 353.0 | 1.0 | 199.6 | 0.53 | -90.0 | 7 | 129.95 | 179.7 | 0.00 |
| 103 | 330.81 | 32.2 | 2.0 | 99.8 | 0.70 | -90.0 | 6 | 95.67 | 31.5 | 0.00 |

| | | | | | | | | | | |
|-----|---------|-------|-----|-------|------|-------|----|--------|-------|------|
| 104 | 333.07 | 32.2 | 2.0 | 99.8 | 0.70 | -90.0 | 6 | 98.53 | 31.5 | 0.00 |
| 105 | 330.51 | 32.2 | 2.0 | 99.8 | 0.70 | -90.0 | 6 | 95.28 | 31.5 | 0.00 |
| 106 | 330.62 | 32.2 | 2.0 | 99.8 | 0.70 | -90.0 | 6 | 95.42 | 31.5 | 0.00 |
| 107 | 320.46 | 32.2 | 2.0 | 99.8 | 0.70 | -90.0 | 18 | 84.59 | 89.8 | 0.23 |
| 108 | 309.54 | 29.7 | 1.0 | 99.8 | 0.29 | -10.0 | 18 | 103.32 | 89.8 | 0.50 |
| 109 | 286.39 | 30.5 | 1.0 | 99.8 | 0.29 | -10.0 | 18 | 85.38 | 89.8 | 0.50 |
| 110 | 263.26 | 31.5 | 2.0 | 99.8 | 0.42 | -90.0 | 18 | 89.28 | 89.8 | 0.23 |
| 111 | 346.67 | 353.0 | 1.0 | 299.5 | 0.42 | -10.0 | 8 | 108.98 | 269.5 | 0.00 |
| 112 | 798.67 | 353.0 | 1.0 | 199.6 | 0.22 | -50.0 | 7 | 256.85 | 179.7 | 0.00 |
| 113 | 606.07 | 33.4 | 1.0 | 199.6 | 0.22 | -50.0 | 12 | 339.75 | 179.7 | 0.10 |
| 114 | 596.38 | 31.5 | 1.0 | 199.6 | 0.22 | -50.0 | 12 | 437.99 | 179.7 | 0.10 |
| 115 | 566.97 | 29.7 | 1.0 | 199.6 | 0.22 | -50.0 | 12 | 468.05 | 179.7 | 0.10 |
| 116 | 539.09 | 34.9 | 1.0 | 199.6 | 0.37 | -10.0 | 12 | 196.43 | 179.7 | 0.10 |
| 117 | 597.71 | 34.9 | 1.0 | 199.6 | 0.37 | -10.0 | 12 | 202.71 | 179.7 | 0.10 |
| 118 | 665.48 | 34.9 | 1.0 | 199.6 | 0.37 | -10.0 | 1 | 201.59 | 179.7 | 0.39 |
| 119 | 709.89 | 34.5 | 1.0 | 199.6 | 0.37 | -10.0 | 8 | 198.73 | 179.7 | 0.37 |
| 120 | 711.26 | 29.2 | 1.0 | 199.6 | 0.37 | -10.0 | 8 | 201.05 | 179.7 | 0.37 |
| 121 | 762.20 | 25.3 | 1.0 | 199.6 | 0.37 | -10.0 | 1 | 209.40 | 179.7 | 0.39 |
| 122 | 842.07 | 29.2 | 1.0 | 199.6 | 0.37 | -10.0 | 8 | 271.73 | 179.7 | 0.37 |
| 123 | 853.43 | 29.2 | 1.0 | 199.6 | 0.37 | -10.0 | 8 | 303.30 | 179.7 | 0.37 |
| 124 | 741.51 | 29.2 | 1.0 | 199.6 | 0.53 | -90.0 | 8 | 211.02 | 179.7 | 0.37 |
| 125 | 751.26 | 34.5 | 1.0 | 199.6 | 0.53 | -90.0 | 8 | 247.38 | 179.7 | 0.37 |
| 126 | 745.13 | 33.4 | 1.0 | 199.6 | 0.65 | -50.0 | 8 | 245.75 | 179.7 | 0.37 |
| 127 | 792.76 | 23.2 | 1.0 | 199.6 | 0.65 | -50.0 | 8 | 262.53 | 179.7 | 0.37 |
| 128 | 864.92 | 12.9 | 1.0 | 199.6 | 0.65 | -50.0 | 8 | 280.53 | 179.7 | 0.37 |
| 129 | 942.26 | 3.2 | 1.0 | 199.6 | 0.53 | -90.0 | 8 | 306.18 | 179.7 | 0.37 |
| 130 | 991.91 | 353.0 | 1.0 | 199.6 | 0.53 | -90.0 | 8 | 297.92 | 179.7 | 0.37 |
| 131 | 952.28 | 353.0 | 1.0 | 199.6 | 0.53 | -90.0 | 8 | 266.43 | 179.7 | 0.37 |
| 132 | 760.72 | 353.0 | 1.0 | 199.6 | 0.53 | -90.0 | 7 | 215.36 | 179.7 | 0.00 |
| 133 | 609.16 | 353.0 | 1.0 | 199.6 | 0.37 | -10.0 | 8 | 165.45 | 179.7 | 0.37 |
| 134 | 387.75 | 353.0 | 1.0 | 199.6 | 0.53 | -90.0 | 7 | 107.40 | 179.7 | 0.00 |
| 135 | 310.66 | 32.2 | 2.0 | 99.8 | 0.70 | -90.0 | 18 | 78.82 | 89.8 | 0.23 |
| 136 | 314.25 | 32.2 | 2.0 | 99.8 | 0.70 | -90.0 | 18 | 81.11 | 89.8 | 0.23 |
| 137 | 303.95 | 32.2 | 2.0 | 99.8 | 0.70 | -90.0 | 18 | 74.76 | 89.8 | 0.23 |
| 138 | 310.59 | 29.7 | 1.0 | 99.8 | 0.29 | -10.0 | 18 | 96.41 | 89.8 | 0.50 |
| 139 | 271.38 | 30.5 | 1.0 | 99.8 | 0.29 | -10.0 | 18 | 80.24 | 89.8 | 0.50 |
| 140 | 402.52 | 353.0 | 1.0 | 199.6 | 0.37 | -10.0 | 7 | 108.29 | 179.7 | 0.00 |
| 141 | 890.99 | 353.0 | 1.0 | 199.6 | 0.22 | -50.0 | 7 | 274.56 | 179.7 | 0.00 |
| 142 | 1358.16 | 353.0 | 1.0 | 199.6 | 0.22 | -50.0 | 8 | 425.68 | 179.7 | 0.37 |
| 143 | 1502.30 | 353.0 | 1.0 | 199.6 | 0.18 | -90.0 | 8 | 556.13 | 179.7 | 0.37 |
| 144 | 1564.75 | 353.0 | 1.0 | 199.6 | 0.18 | -90.0 | 12 | 512.64 | 179.7 | 0.10 |
| 145 | 1429.83 | 353.0 | 1.0 | 199.6 | 0.18 | -90.0 | 12 | 709.77 | 179.7 | 0.10 |
| 146 | 1438.17 | 3.2 | 1.0 | 199.6 | 0.18 | -90.0 | 1 | 476.28 | 179.7 | 0.39 |
| 147 | 1371.96 | 12.9 | 1.0 | 199.6 | 0.18 | -90.0 | 8 | 507.83 | 179.7 | 0.37 |
| 148 | 1300.67 | 12.9 | 1.0 | 199.6 | 0.18 | -90.0 | 8 | 478.43 | 179.7 | 0.37 |
| 149 | 1225.24 | 12.9 | 1.0 | 199.6 | 0.18 | -90.0 | 8 | 429.68 | 179.7 | 0.37 |
| 150 | 1141.20 | 3.2 | 1.0 | 299.5 | 0.20 | -90.0 | 1 | 386.46 | 269.5 | 0.00 |
| 151 | 636.90 | 29.7 | 1.0 | 199.6 | 0.22 | -50.0 | 12 | 268.49 | 179.7 | 0.10 |
| 152 | 660.87 | 34.5 | 1.0 | 199.6 | 0.22 | -50.0 | 8 | 203.97 | 179.7 | 0.37 |
| 153 | 576.38 | 25.3 | 1.0 | 199.6 | 0.22 | -50.0 | 12 | 471.92 | 179.7 | 0.10 |
| 154 | 568.71 | 25.3 | 1.0 | 199.6 | 0.22 | -50.0 | 12 | 470.75 | 179.7 | 0.10 |
| 155 | 589.66 | 34.9 | 1.0 | 299.5 | 0.42 | -10.0 | 1 | 177.62 | 269.5 | 0.00 |
| 156 | 644.57 | 33.4 | 1.0 | 199.6 | 0.37 | -10.0 | 1 | 176.29 | 179.7 | 0.39 |
| 157 | 689.90 | 34.5 | 1.0 | 199.6 | 0.22 | -50.0 | 8 | 257.30 | 179.7 | 0.37 |
| 158 | 926.35 | 29.7 | 1.0 | 199.6 | 0.22 | -50.0 | 8 | 365.37 | 179.7 | 0.37 |
| 159 | 868.47 | 12.9 | 1.0 | 199.6 | 0.22 | -50.0 | 12 | 489.89 | 179.7 | 0.10 |
| 160 | 841.77 | 23.2 | 1.0 | 199.6 | 0.37 | -10.0 | 8 | 259.15 | 179.7 | 0.37 |
| 161 | 923.62 | 23.2 | 1.0 | 199.6 | 0.37 | -10.0 | 8 | 299.80 | 179.7 | 0.37 |
| 162 | 744.39 | 29.2 | 1.0 | 199.6 | 0.37 | -10.0 | 8 | 279.50 | 179.7 | 0.37 |
| 163 | 812.94 | 25.3 | 1.0 | 199.6 | 0.53 | -90.0 | 8 | 244.66 | 179.7 | 0.37 |

| | | | | | | | | | | |
|-----|---------|-------|-----|-------|------|-------|----|--------|-------|------|
| 164 | 800.20 | 23.2 | 1.0 | 199.6 | 0.65 | -50.0 | 8 | 241.28 | 179.7 | 0.37 |
| 165 | 835.87 | 13.9 | 1.0 | 199.6 | 0.65 | -50.0 | 8 | 255.18 | 179.7 | 0.37 |
| 166 | 926.01 | 3.2 | 1.0 | 199.6 | 0.53 | -90.0 | 8 | 279.32 | 179.7 | 0.37 |
| 167 | 936.61 | 3.2 | 1.0 | 199.6 | 0.53 | -90.0 | 8 | 278.28 | 179.7 | 0.37 |
| 168 | 997.60 | 353.0 | 1.0 | 199.6 | 0.37 | -10.0 | 8 | 306.46 | 179.7 | 0.37 |
| 169 | 873.47 | 353.0 | 1.0 | 199.6 | 0.53 | -90.0 | 8 | 235.97 | 179.7 | 0.37 |
| 170 | 809.20 | 353.0 | 1.0 | 199.6 | 0.37 | -10.0 | 8 | 236.28 | 179.7 | 0.37 |
| 171 | 572.51 | 353.0 | 1.0 | 199.6 | 0.37 | -10.0 | 7 | 167.40 | 179.7 | 0.00 |
| 172 | 354.20 | 353.0 | 1.0 | 199.6 | 0.37 | -10.0 | 7 | 109.39 | 179.7 | 0.00 |
| 173 | 301.64 | 32.2 | 2.0 | 99.8 | 0.70 | -90.0 | 18 | 73.51 | 89.8 | 0.23 |
| 174 | 299.66 | 29.2 | 1.0 | 99.8 | 0.29 | -10.0 | 18 | 103.50 | 89.8 | 0.50 |
| 175 | 307.10 | 29.7 | 1.0 | 99.8 | 0.29 | -10.0 | 18 | 92.28 | 89.8 | 0.50 |
| 176 | 372.48 | 353.0 | 1.0 | 199.6 | 0.37 | -10.0 | 7 | 106.07 | 179.7 | 0.00 |
| 177 | 579.58 | 353.0 | 1.0 | 199.6 | 0.37 | -10.0 | 7 | 153.30 | 179.7 | 0.00 |
| 178 | 1333.37 | 353.0 | 1.0 | 199.6 | 0.22 | -50.0 | 8 | 428.91 | 179.7 | 0.37 |
| 179 | 1502.46 | 353.0 | 1.0 | 199.6 | 0.22 | -50.0 | 8 | 466.40 | 179.7 | 0.37 |
| 180 | 1390.61 | 353.0 | 1.0 | 199.6 | 0.18 | -90.0 | 1 | 527.14 | 179.7 | 0.39 |
| 181 | 1554.79 | 353.0 | 1.0 | 199.6 | 0.18 | -90.0 | 12 | 740.03 | 179.7 | 0.10 |
| 182 | 1373.37 | 353.0 | 1.0 | 199.6 | 0.18 | -90.0 | 12 | 777.65 | 179.7 | 0.10 |
| 183 | 1447.61 | 3.2 | 1.0 | 199.6 | 0.18 | -90.0 | 1 | 523.31 | 179.7 | 0.39 |
| 184 | 1435.04 | 12.9 | 1.0 | 199.6 | 0.18 | -90.0 | 8 | 554.32 | 179.7 | 0.37 |
| 185 | 1332.97 | 13.9 | 1.0 | 199.6 | 0.18 | -90.0 | 8 | 490.51 | 179.7 | 0.37 |
| 186 | 1234.31 | 13.9 | 1.0 | 199.6 | 0.18 | -90.0 | 8 | 421.90 | 179.7 | 0.37 |
| 187 | 1209.69 | 12.9 | 1.0 | 299.5 | 0.20 | -90.0 | 8 | 421.82 | 269.5 | 0.00 |
| 188 | 1095.95 | 12.9 | 1.0 | 299.5 | 0.20 | -90.0 | 8 | 394.84 | 269.5 | 0.00 |
| 189 | 978.74 | 12.9 | 1.0 | 299.5 | 0.20 | -90.0 | 8 | 357.05 | 269.5 | 0.00 |
| 190 | 904.62 | 12.9 | 1.0 | 199.6 | 0.18 | -90.0 | 8 | 283.19 | 179.7 | 0.37 |
| 191 | 663.71 | 29.2 | 1.0 | 199.6 | 0.22 | -50.0 | 8 | 193.69 | 179.7 | 0.37 |
| 192 | 685.31 | 31.5 | 1.0 | 199.6 | 0.22 | -50.0 | 8 | 236.21 | 179.7 | 0.37 |
| 193 | 716.07 | 29.7 | 1.0 | 199.6 | 0.22 | -50.0 | 1 | 233.89 | 179.7 | 0.39 |
| 194 | 749.39 | 33.4 | 1.0 | 199.6 | 0.22 | -50.0 | 8 | 260.20 | 179.7 | 0.37 |
| 195 | 752.03 | 34.9 | 1.0 | 199.6 | 0.22 | -50.0 | 8 | 278.33 | 179.7 | 0.37 |
| 196 | 846.65 | 31.5 | 1.0 | 199.6 | 0.22 | -50.0 | 8 | 323.15 | 179.7 | 0.37 |
| 197 | 1059.56 | 25.3 | 1.0 | 199.6 | 0.22 | -50.0 | 8 | 383.66 | 179.7 | 0.37 |
| 198 | 1166.90 | 25.3 | 1.0 | 199.6 | 0.22 | -50.0 | 8 | 452.23 | 179.7 | 0.37 |
| 199 | 1118.06 | 23.2 | 1.0 | 199.6 | 0.22 | -50.0 | 8 | 453.91 | 179.7 | 0.37 |
| 200 | 1012.65 | 3.2 | 1.0 | 199.6 | 0.22 | -50.0 | 12 | 748.07 | 179.7 | 0.10 |
| 201 | 883.41 | 13.9 | 1.0 | 199.6 | 0.37 | -10.0 | 1 | 258.55 | 179.7 | 0.39 |
| 202 | 967.48 | 23.2 | 1.0 | 199.6 | 0.37 | -10.0 | 8 | 348.90 | 179.7 | 0.37 |
| 203 | 776.91 | 23.2 | 1.0 | 199.6 | 0.53 | -90.0 | 8 | 238.67 | 179.7 | 0.37 |
| 204 | 829.70 | 23.2 | 1.0 | 199.6 | 0.53 | -90.0 | 8 | 272.70 | 179.7 | 0.37 |
| 205 | 856.92 | 13.9 | 1.0 | 199.6 | 0.53 | -90.0 | 8 | 263.50 | 179.7 | 0.37 |
| 206 | 926.83 | 12.9 | 1.0 | 199.6 | 0.53 | -90.0 | 8 | 303.92 | 179.7 | 0.37 |
| 207 | 975.06 | 353.0 | 1.0 | 199.6 | 0.37 | -10.0 | 12 | 344.60 | 179.7 | 0.10 |
| 208 | 1103.21 | 353.0 | 1.0 | 199.6 | 0.37 | -10.0 | 8 | 325.00 | 179.7 | 0.37 |
| 209 | 958.95 | 353.0 | 1.0 | 199.6 | 0.37 | -10.0 | 8 | 338.70 | 179.7 | 0.37 |
| 210 | 959.15 | 353.0 | 1.0 | 199.6 | 0.37 | -10.0 | 8 | 287.98 | 179.7 | 0.37 |
| 211 | 715.76 | 353.0 | 1.0 | 199.6 | 0.37 | -10.0 | 7 | 212.44 | 179.7 | 0.00 |
| 212 | 466.65 | 353.0 | 1.0 | 199.6 | 0.37 | -10.0 | 7 | 147.21 | 179.7 | 0.00 |
| 213 | 304.35 | 29.7 | 1.0 | 99.8 | 0.29 | -10.0 | 18 | 107.24 | 89.8 | 0.50 |
| 214 | 339.45 | 353.0 | 1.0 | 199.6 | 0.37 | -10.0 | 7 | 100.04 | 179.7 | 0.00 |
| 215 | 579.67 | 353.0 | 1.0 | 199.6 | 0.37 | -10.0 | 7 | 163.68 | 179.7 | 0.00 |
| 216 | 790.79 | 353.0 | 1.0 | 199.6 | 0.37 | -10.0 | 8 | 211.78 | 179.7 | 0.37 |
| 217 | 1326.03 | 353.0 | 1.0 | 199.6 | 0.22 | -50.0 | 8 | 516.68 | 179.7 | 0.37 |
| 218 | 1492.63 | 353.0 | 1.0 | 199.6 | 0.22 | -50.0 | 1 | 398.33 | 179.7 | 0.39 |
| 219 | 1437.44 | 3.2 | 1.0 | 199.6 | 0.22 | -50.0 | 8 | 514.80 | 179.7 | 0.37 |
| 220 | 1378.42 | 3.2 | 1.0 | 199.6 | 0.22 | -50.0 | 8 | 421.16 | 179.7 | 0.37 |
| 221 | 1366.64 | 3.2 | 1.0 | 199.6 | 0.18 | -90.0 | 1 | 592.36 | 179.7 | 0.39 |
| 222 | 1425.99 | 3.2 | 1.0 | 199.6 | 0.18 | -90.0 | 12 | 647.47 | 179.7 | 0.10 |
| 223 | 1436.55 | 13.9 | 1.0 | 199.6 | 0.18 | -90.0 | 8 | 549.19 | 179.7 | 0.37 |

| | | | | | | | | | | |
|-----|---------|-------|-----|-------|------|-------|----|--------|-------|------|
| 224 | 1321.48 | 13.9 | 1.0 | 199.6 | 0.18 | -90.0 | 8 | 444.08 | 179.7 | 0.37 |
| 225 | 1224.01 | 13.9 | 1.0 | 199.6 | 0.18 | -90.0 | 1 | 375.12 | 179.7 | 0.39 |
| 226 | 1190.89 | 13.2 | 1.0 | 299.5 | 0.20 | -90.0 | 1 | 404.65 | 269.5 | 0.00 |
| 227 | 1175.32 | 12.9 | 1.0 | 299.5 | 0.20 | -90.0 | 8 | 402.94 | 269.5 | 0.00 |
| 228 | 1067.81 | 12.9 | 1.0 | 299.5 | 0.20 | -90.0 | 8 | 378.71 | 269.5 | 0.00 |
| 229 | 973.12 | 12.9 | 1.0 | 299.5 | 0.20 | -90.0 | 8 | 341.61 | 269.5 | 0.00 |
| 230 | 923.27 | 12.9 | 1.0 | 299.5 | 0.20 | -90.0 | 8 | 308.79 | 269.5 | 0.00 |
| 231 | 645.17 | 29.2 | 1.0 | 199.6 | 0.22 | -50.0 | 8 | 201.77 | 179.7 | 0.37 |
| 232 | 684.56 | 29.2 | 1.0 | 199.6 | 0.22 | -50.0 | 8 | 214.61 | 179.7 | 0.37 |
| 233 | 704.20 | 30.5 | 1.0 | 199.6 | 0.22 | -50.0 | 8 | 235.93 | 179.7 | 0.37 |
| 234 | 719.24 | 29.2 | 1.0 | 199.6 | 0.22 | -50.0 | 1 | 227.41 | 179.7 | 0.39 |
| 235 | 770.59 | 31.5 | 1.0 | 199.6 | 0.22 | -50.0 | 8 | 267.03 | 179.7 | 0.37 |
| 236 | 895.67 | 29.2 | 1.0 | 199.6 | 0.22 | -50.0 | 8 | 326.28 | 179.7 | 0.37 |
| 237 | 1070.38 | 25.3 | 1.0 | 199.6 | 0.22 | -50.0 | 8 | 382.97 | 179.7 | 0.37 |
| 238 | 1122.30 | 25.3 | 1.0 | 199.6 | 0.22 | -50.0 | 8 | 422.54 | 179.7 | 0.37 |
| 239 | 1222.97 | 23.2 | 1.0 | 199.6 | 0.22 | -50.0 | 8 | 479.71 | 179.7 | 0.37 |
| 240 | 1272.94 | 23.2 | 1.0 | 199.6 | 0.22 | -50.0 | 8 | 507.12 | 179.7 | 0.37 |
| 241 | 1025.77 | 3.2 | 1.0 | 199.6 | 0.22 | -50.0 | 12 | 737.24 | 179.7 | 0.10 |
| 242 | 934.78 | 13.9 | 1.0 | 199.6 | 0.37 | -10.0 | 8 | 264.17 | 179.7 | 0.37 |
| 243 | 999.50 | 13.9 | 1.0 | 199.6 | 0.37 | -10.0 | 8 | 306.42 | 179.7 | 0.37 |
| 244 | 832.08 | 13.9 | 1.0 | 199.6 | 0.53 | -90.0 | 8 | 237.22 | 179.7 | 0.37 |
| 245 | 893.31 | 13.9 | 1.0 | 199.6 | 0.53 | -90.0 | 8 | 276.46 | 179.7 | 0.37 |
| 246 | 935.68 | 3.2 | 1.0 | 199.6 | 0.37 | -10.0 | 1 | 280.34 | 179.7 | 0.39 |
| 247 | 1164.88 | 3.2 | 1.0 | 199.6 | 0.37 | -10.0 | 8 | 389.01 | 179.7 | 0.37 |
| 248 | 1168.95 | 353.0 | 1.0 | 199.6 | 0.37 | -10.0 | 8 | 336.30 | 179.7 | 0.37 |
| 249 | 1154.61 | 353.0 | 1.0 | 199.6 | 0.37 | -10.0 | 8 | 367.97 | 179.7 | 0.37 |
| 250 | 1037.32 | 353.0 | 1.0 | 199.6 | 0.37 | -10.0 | 8 | 310.70 | 179.7 | 0.37 |
| 251 | 790.43 | 353.0 | 1.0 | 199.6 | 0.37 | -10.0 | 7 | 238.56 | 179.7 | 0.00 |
| 252 | 547.77 | 353.0 | 1.0 | 199.6 | 0.37 | -10.0 | 7 | 170.99 | 179.7 | 0.00 |
| 253 | 614.65 | 353.0 | 1.0 | 199.6 | 0.37 | -10.0 | 7 | 182.28 | 179.7 | 0.00 |
| 254 | 838.05 | 353.0 | 1.0 | 199.6 | 0.37 | -10.0 | 8 | 226.97 | 179.7 | 0.37 |
| 255 | 1233.40 | 353.0 | 1.0 | 199.6 | 0.22 | -50.0 | 8 | 489.07 | 179.7 | 0.37 |
| 256 | 1490.72 | 353.0 | 1.0 | 199.6 | 0.22 | -50.0 | 1 | 442.39 | 179.7 | 0.39 |
| 257 | 1390.48 | 353.0 | 1.0 | 199.6 | 0.22 | -50.0 | 12 | 583.90 | 179.7 | 0.10 |
| 258 | 1388.65 | 3.2 | 1.0 | 199.6 | 0.22 | -50.0 | 1 | 445.22 | 179.7 | 0.39 |
| 259 | 1410.41 | 13.2 | 1.0 | 199.6 | 0.22 | -50.0 | 8 | 550.21 | 179.7 | 0.37 |
| 260 | 1312.98 | 13.9 | 1.0 | 199.6 | 0.22 | -50.0 | 8 | 480.79 | 179.7 | 0.37 |
| 261 | 1464.04 | 13.9 | 1.0 | 199.6 | 0.18 | -90.0 | 8 | 562.17 | 179.7 | 0.37 |
| 262 | 1355.19 | 13.9 | 1.0 | 199.6 | 0.18 | -90.0 | 8 | 459.45 | 179.7 | 0.37 |
| 263 | 1248.35 | 13.9 | 1.0 | 199.6 | 0.18 | -90.0 | 1 | 418.79 | 179.7 | 0.39 |
| 264 | 1167.31 | 13.9 | 1.0 | 199.6 | 0.18 | -90.0 | 1 | 383.55 | 179.7 | 0.39 |
| 265 | 1202.71 | 12.9 | 1.0 | 299.5 | 0.20 | -90.0 | 1 | 404.19 | 269.5 | 0.00 |
| 266 | 1153.04 | 12.9 | 1.0 | 299.5 | 0.20 | -90.0 | 8 | 367.18 | 269.5 | 0.00 |
| 267 | 1062.65 | 12.9 | 1.0 | 299.5 | 0.20 | -90.0 | 8 | 353.91 | 269.5 | 0.00 |
| 268 | 989.84 | 12.9 | 1.0 | 299.5 | 0.20 | -90.0 | 8 | 316.77 | 269.5 | 0.00 |
| 269 | 961.03 | 13.9 | 1.0 | 299.5 | 0.20 | -90.0 | 8 | 290.21 | 269.5 | 0.00 |
| 270 | 678.04 | 25.3 | 1.0 | 199.6 | 0.22 | -50.0 | 1 | 204.50 | 179.7 | 0.39 |
| 271 | 703.06 | 25.3 | 1.0 | 199.6 | 0.22 | -50.0 | 1 | 215.71 | 179.7 | 0.39 |
| 272 | 751.92 | 29.7 | 1.0 | 199.6 | 0.22 | -50.0 | 8 | 259.35 | 179.7 | 0.37 |
| 273 | 748.69 | 25.3 | 1.0 | 199.6 | 0.22 | -50.0 | 1 | 264.73 | 179.7 | 0.39 |
| 274 | 882.89 | 25.3 | 1.0 | 199.6 | 0.22 | -50.0 | 1 | 296.89 | 179.7 | 0.39 |
| 275 | 1061.71 | 25.3 | 1.0 | 199.6 | 0.18 | -90.0 | 8 | 424.35 | 179.7 | 0.37 |
| 276 | 1288.59 | 25.3 | 1.0 | 199.6 | 0.18 | -90.0 | 8 | 526.71 | 179.7 | 0.37 |
| 277 | 1205.79 | 12.9 | 1.0 | 199.6 | 0.18 | -90.0 | 12 | 476.73 | 179.7 | 0.10 |
| 278 | 1266.12 | 3.2 | 1.0 | 199.6 | 0.18 | -90.0 | 12 | 895.26 | 179.7 | 0.10 |
| 279 | 1299.38 | 23.2 | 1.0 | 199.6 | 0.22 | -50.0 | 8 | 480.27 | 179.7 | 0.37 |
| 280 | 974.01 | 3.2 | 1.0 | 199.6 | 0.22 | -50.0 | 12 | 677.78 | 179.7 | 0.10 |
| 281 | 980.41 | 13.9 | 1.0 | 199.6 | 0.37 | -10.0 | 8 | 300.72 | 179.7 | 0.37 |
| 282 | 1051.14 | 13.9 | 1.0 | 199.6 | 0.37 | -10.0 | 8 | 362.14 | 179.7 | 0.37 |
| 283 | 1060.62 | 12.9 | 1.0 | 199.6 | 0.37 | -10.0 | 8 | 385.54 | 179.7 | 0.37 |

| | | | | | | | | | | |
|-----|---------|-------|-----|-------|------|-------|----|--------|-------|------|
| 284 | 1136.30 | 3.2 | 1.0 | 199.6 | 0.37 | -10.0 | 8 | 355.13 | 179.7 | 0.37 |
| 285 | 1075.77 | 3.2 | 1.0 | 199.6 | 0.37 | -10.0 | 8 | 334.76 | 179.7 | 0.37 |
| 286 | 1221.38 | 353.0 | 1.0 | 199.6 | 0.37 | -10.0 | 8 | 371.95 | 179.7 | 0.37 |
| 287 | 1133.52 | 353.0 | 1.0 | 199.6 | 0.37 | -10.0 | 8 | 343.90 | 179.7 | 0.37 |
| 288 | 880.60 | 353.0 | 1.0 | 199.6 | 0.37 | -10.0 | 7 | 258.75 | 179.7 | 0.00 |
| 289 | 970.76 | 353.0 | 1.0 | 199.6 | 0.37 | -10.0 | 8 | 269.53 | 179.7 | 0.37 |
| 290 | 989.52 | 353.0 | 1.0 | 199.6 | 0.37 | -10.0 | 8 | 267.95 | 179.7 | 0.37 |
| 291 | 1230.21 | 353.0 | 1.0 | 199.6 | 0.22 | -50.0 | 12 | 460.03 | 179.7 | 0.10 |
| 292 | 1386.90 | 353.0 | 1.0 | 199.6 | 0.22 | -50.0 | 12 | 642.50 | 179.7 | 0.10 |
| 293 | 1414.92 | 3.2 | 1.0 | 199.6 | 0.22 | -50.0 | 1 | 504.50 | 179.7 | 0.39 |
| 294 | 1323.68 | 3.2 | 1.0 | 199.6 | 0.22 | -50.0 | 12 | 523.61 | 179.7 | 0.10 |
| 295 | 1313.31 | 3.2 | 1.0 | 199.6 | 0.18 | -90.0 | 12 | 846.55 | 179.7 | 0.10 |
| 296 | 1401.26 | 12.9 | 1.0 | 199.6 | 0.18 | -90.0 | 1 | 517.97 | 179.7 | 0.39 |
| 297 | 1345.27 | 13.9 | 1.0 | 199.6 | 0.18 | -90.0 | 1 | 477.06 | 179.7 | 0.39 |
| 298 | 1249.49 | 13.9 | 1.0 | 199.6 | 0.18 | -90.0 | 1 | 457.09 | 179.7 | 0.39 |
| 299 | 1164.14 | 23.2 | 1.0 | 199.6 | 0.18 | -90.0 | 8 | 417.27 | 179.7 | 0.37 |
| 300 | 1202.63 | 13.9 | 1.0 | 299.5 | 0.20 | -90.0 | 1 | 437.35 | 269.5 | 0.00 |
| 301 | 1173.98 | 13.9 | 1.0 | 299.5 | 0.20 | -90.0 | 1 | 392.35 | 269.5 | 0.00 |
| 302 | 1112.52 | 13.9 | 1.0 | 299.5 | 0.20 | -90.0 | 8 | 350.54 | 269.5 | 0.00 |
| 303 | 1033.11 | 12.9 | 1.0 | 299.5 | 0.20 | -90.0 | 8 | 319.48 | 269.5 | 0.00 |
| 304 | 1004.10 | 13.9 | 1.0 | 299.5 | 0.20 | -90.0 | 1 | 307.35 | 269.5 | 0.00 |
| 305 | 983.06 | 13.9 | 1.0 | 299.5 | 0.20 | -90.0 | 1 | 315.64 | 269.5 | 0.00 |
| 306 | 956.61 | 13.9 | 1.0 | 299.5 | 0.20 | -90.0 | 1 | 315.25 | 269.5 | 0.00 |
| 307 | 985.96 | 23.2 | 1.0 | 299.5 | 0.20 | -90.0 | 8 | 365.07 | 269.5 | 0.00 |
| 308 | 1048.53 | 23.2 | 1.0 | 299.5 | 0.20 | -90.0 | 8 | 377.17 | 269.5 | 0.00 |
| 309 | 1099.87 | 23.2 | 1.0 | 299.5 | 0.20 | -90.0 | 8 | 371.96 | 269.5 | 0.00 |
| 310 | 1070.63 | 23.2 | 1.0 | 299.5 | 0.20 | -90.0 | 8 | 346.98 | 269.5 | 0.00 |
| 311 | 900.32 | 25.3 | 1.0 | 199.6 | 0.18 | -90.0 | 8 | 312.72 | 179.7 | 0.37 |
| 312 | 862.09 | 25.3 | 1.0 | 299.5 | 0.25 | -50.0 | 1 | 275.91 | 269.5 | 0.00 |
| 313 | 819.01 | 25.3 | 1.0 | 199.6 | 0.22 | -50.0 | 8 | 243.50 | 179.7 | 0.37 |
| 314 | 968.71 | 25.3 | 1.0 | 199.6 | 0.22 | -50.0 | 8 | 332.28 | 179.7 | 0.37 |
| 315 | 1304.58 | 25.3 | 1.0 | 199.6 | 0.18 | -90.0 | 8 | 522.38 | 179.7 | 0.37 |
| 316 | 1366.30 | 23.2 | 1.0 | 199.6 | 0.18 | -90.0 | 8 | 557.73 | 179.7 | 0.37 |
| 317 | 1421.83 | 23.2 | 1.0 | 199.6 | 0.18 | -90.0 | 8 | 544.52 | 179.7 | 0.37 |
| 318 | 1334.96 | 23.2 | 1.0 | 199.6 | 0.18 | -90.0 | 8 | 471.86 | 179.7 | 0.37 |
| 319 | 1279.77 | 23.2 | 1.0 | 199.6 | 0.18 | -90.0 | 8 | 467.25 | 179.7 | 0.37 |
| 320 | 1208.62 | 23.2 | 1.0 | 199.6 | 0.18 | -90.0 | 8 | 441.29 | 179.7 | 0.37 |
| 321 | 1191.14 | 13.9 | 1.0 | 299.5 | 0.20 | -90.0 | 1 | 436.31 | 269.5 | 0.00 |
| 322 | 1137.68 | 13.9 | 1.0 | 299.5 | 0.20 | -90.0 | 1 | 399.84 | 269.5 | 0.00 |
| 323 | 1091.66 | 13.9 | 1.0 | 299.5 | 0.20 | -90.0 | 1 | 362.76 | 269.5 | 0.00 |
| 324 | 1050.33 | 13.9 | 1.0 | 299.5 | 0.20 | -90.0 | 1 | 355.09 | 269.5 | 0.00 |
| 325 | 1054.52 | 23.2 | 1.0 | 299.5 | 0.20 | -90.0 | 8 | 399.44 | 269.5 | 0.00 |
| 326 | 1117.61 | 23.2 | 1.0 | 299.5 | 0.20 | -90.0 | 8 | 407.17 | 269.5 | 0.00 |
| 327 | 1154.42 | 23.2 | 1.0 | 299.5 | 0.20 | -90.0 | 8 | 403.05 | 269.5 | 0.00 |
| 328 | 1120.97 | 23.2 | 1.0 | 199.6 | 0.18 | -90.0 | 8 | 400.53 | 179.7 | 0.37 |
| 329 | 1162.31 | 25.3 | 1.0 | 199.6 | 0.18 | -90.0 | 8 | 447.24 | 179.7 | 0.37 |
| 330 | 1305.63 | 23.2 | 1.0 | 199.6 | 0.18 | -90.0 | 8 | 520.70 | 179.7 | 0.37 |
| 331 | 1397.70 | 23.2 | 1.0 | 199.6 | 0.18 | -90.0 | 8 | 533.32 | 179.7 | 0.37 |
| 332 | 1271.30 | 23.2 | 1.0 | 199.6 | 0.18 | -90.0 | 8 | 475.53 | 179.7 | 0.37 |
| 333 | 1182.06 | 23.2 | 1.0 | 299.5 | 0.20 | -90.0 | 8 | 476.31 | 269.5 | 0.00 |

TABLE 10
CTSCREEN
SUMMARY OF CONCENTRATIONS
HILL # 3

TABLE 10
CTSCREEN
SUMMARY OF CONCENTRATIONS

HILL # 3

HILL #3

TSCREEN:URC AND PENELEC HILL 3 UNSTABLE AND STABLE

SUMMARY FOR ALL STABLE HOURS

| REC # | CONC UG/M**3 | WD DEG | WS M/S | SIGV M/S | SIGW M/S | DTHDZ K/M | HCRIT M | <--- PEAK SOURCE --> | | | | |
|----------|-----------------|-----------|-----------|-------------|-------------|--------------|------------|----------------------|--------|-------|---------|---|
| | | | | | | | | NS | SRC | CTRIB | HPL | |
| 230 | 844.00 | 247.0 | 2.0 | 0.30 | 0.04 | 0.035 | 165.0 | 12 | 300.83 | 131.4 | UG/M**3 | M |

SUMMARY FOR ALL UNSTABLE HOURS

| REC # | CONC UG/M**3 | WD DEG | WS M/S | ZI M | W* M/S | L M | NS | <----- PEAK SOURCE -----> | | | | |
|----------|-----------------|-----------|-----------|---------|-----------|--------|----|---------------------------|-------|--------|-------|------|
| | | | | | | | | SRC | CTRIB | HPL | PEN | |
| 212 | 1089.50 | 254.8 | 1.0 | 223.7 | 0.18 | -90.0 | 8 | UG/M**3 | M | 358.00 | 201.4 | 0.21 |

SUMMARY FOR ALL HOURS

| REC # | CONC UG/M**3 | 3HR UG/M**3 | 24HR UG/M**3 | ANNUAL | | |
|----------|-----------------|----------------|-----------------|---------|--|-------|
| | | | | UG/M**3 | | |
| 212 | 1089.50 | 762.65 | 163.42 | | | 32.68 |

RECEPTOR SUMMARY FOR STABLE HOURS

| REC # | CONC UG/M**3 | WD DEG | WS M/S | SIGV M/S | SIGW M/S | DTHDZ K/M | HCRIT M | <--- PEAK SOURCE --> | | | | |
|----------|-----------------|-----------|-----------|-------------|-------------|--------------|------------|----------------------|-------|-------|---------|---|
| | | | | | | | | NS | SRC | CTRIB | HPL | |
| 1 | 29.12 | 91.7 | 1.0 | 0.75 | 0.75 | 0.035 | 194.4 | 20 | 29.12 | 235.9 | UG/M**3 | M |
| 2 | 37.67 | 257.1 | 1.0 | 0.75 | 0.75 | 0.035 | 194.4 | 12 | 33.67 | 153.0 | | |
| 3 | 56.16 | 257.1 | 1.0 | 0.75 | 0.75 | 0.035 | 194.4 | 12 | 33.64 | 153.0 | | |
| 4 | 105.66 | 255.0 | 1.0 | 0.75 | 0.75 | 0.035 | 194.4 | 12 | 33.24 | 153.0 | | |
| 5 | 116.87 | 255.0 | 1.0 | 0.75 | 0.75 | 0.035 | 194.4 | 12 | 33.10 | 153.0 | | |
| 6 | 117.30 | 257.1 | 1.0 | 0.75 | 0.75 | 0.035 | 194.4 | 12 | 33.39 | 153.0 | | |
| 7 | 117.51 | 257.1 | 1.0 | 0.75 | 0.75 | 0.035 | 194.4 | 12 | 33.26 | 153.0 | | |
| 8 | 117.42 | 257.1 | 1.0 | 0.75 | 0.75 | 0.035 | 194.4 | 12 | 33.08 | 153.0 | | |
| 9 | 116.91 | 257.1 | 1.0 | 0.75 | 0.75 | 0.035 | 194.4 | 12 | 32.85 | 153.0 | | |
| 10 | 115.81 | 257.1 | 1.0 | 0.75 | 0.75 | 0.035 | 194.4 | 12 | 32.49 | 153.0 | | |
| 11 | 116.23 | 269.7 | 1.0 | 0.75 | 0.75 | 0.035 | 194.4 | 12 | 34.77 | 153.0 | | |
| 12 | 114.46 | 247.3 | 1.0 | 0.75 | 0.75 | 0.035 | 194.4 | 12 | 32.53 | 153.0 | | |
| 13 | 114.01 | 247.3 | 1.0 | 0.75 | 0.75 | 0.035 | 194.4 | 12 | 32.64 | 153.0 | | |
| 14 | 113.44 | 247.3 | 1.0 | 0.75 | 0.75 | 0.035 | 194.4 | 12 | 32.74 | 153.0 | | |
| 15 | 112.75 | 244.2 | 1.0 | 0.75 | 0.75 | 0.035 | 194.4 | 12 | 32.36 | 153.0 | | |
| 16 | 112.12 | 244.2 | 1.0 | 0.75 | 0.75 | 0.035 | 194.4 | 12 | 32.49 | 153.0 | | |
| 17 | 111.86 | 244.0 | 1.0 | 0.75 | 0.75 | 0.035 | 194.4 | 12 | 32.51 | 153.0 | | |
| 18 | 111.66 | 244.0 | 1.0 | 0.75 | 0.75 | 0.035 | 194.4 | 12 | 32.53 | 153.0 | | |
| 19 | 110.92 | 241.9 | 1.0 | 0.75 | 0.75 | 0.035 | 194.4 | 12 | 32.38 | 153.0 | | |

| | | | | | | | | | | |
|----|--------|-------|-----|------|------|-------|-------|----|--------|-------|
| 20 | 110.39 | 239.6 | 1.0 | 0.75 | 0.75 | 0.035 | 194.4 | 12 | 32.19 | 153.0 |
| 21 | 109.99 | 238.0 | 1.0 | 0.75 | 0.75 | 0.035 | 194.4 | 12 | 32.07 | 153.0 |
| 22 | 110.54 | 240.4 | 1.0 | 0.75 | 0.75 | 0.035 | 194.4 | 12 | 32.23 | 153.0 |
| 23 | 111.34 | 242.2 | 1.0 | 0.75 | 0.75 | 0.035 | 194.4 | 12 | 32.29 | 153.0 |
| 24 | 112.22 | 244.2 | 1.0 | 0.75 | 0.75 | 0.035 | 194.4 | 12 | 32.42 | 153.0 |
| 25 | 113.12 | 247.3 | 1.0 | 0.75 | 0.75 | 0.035 | 194.4 | 12 | 32.76 | 153.0 |
| 26 | 113.98 | 247.3 | 1.0 | 0.75 | 0.75 | 0.035 | 194.4 | 12 | 32.61 | 153.0 |
| 27 | 114.66 | 247.3 | 1.0 | 0.75 | 0.75 | 0.035 | 194.4 | 12 | 32.43 | 153.0 |
| 28 | 114.86 | 247.3 | 1.0 | 0.75 | 0.75 | 0.035 | 194.4 | 12 | 32.36 | 153.0 |
| 29 | 114.90 | 247.3 | 1.0 | 0.75 | 0.75 | 0.035 | 194.4 | 12 | 32.36 | 153.0 |
| 30 | 115.17 | 253.4 | 1.0 | 0.75 | 0.75 | 0.035 | 194.4 | 12 | 33.42 | 153.0 |
| 31 | 115.53 | 253.4 | 1.0 | 0.75 | 0.75 | 0.035 | 194.4 | 12 | 33.39 | 153.0 |
| 32 | 115.97 | 253.4 | 1.0 | 0.75 | 0.75 | 0.035 | 194.4 | 12 | 33.33 | 153.0 |
| 33 | 141.55 | 241.8 | 5.0 | 0.30 | 0.30 | 0.010 | 9.3 | 6 | 70.72 | 29.9 |
| 34 | 141.17 | 257.3 | 4.0 | 0.30 | 0.30 | 0.010 | 12.2 | 6 | 71.89 | 33.7 |
| 35 | 136.40 | 266.9 | 4.0 | 0.30 | 0.30 | 0.010 | 12.2 | 6 | 67.81 | 33.7 |
| 36 | 117.64 | 257.1 | 1.0 | 0.75 | 0.75 | 0.035 | 194.4 | 12 | 33.66 | 153.0 |
| 37 | 117.91 | 257.1 | 1.0 | 0.75 | 0.75 | 0.035 | 194.4 | 12 | 33.60 | 153.0 |
| 38 | 118.08 | 257.1 | 1.0 | 0.75 | 0.75 | 0.035 | 194.4 | 12 | 33.51 | 153.0 |
| 39 | 118.13 | 257.1 | 1.0 | 0.75 | 0.75 | 0.035 | 194.4 | 12 | 33.40 | 153.0 |
| 40 | 118.01 | 257.1 | 1.0 | 0.75 | 0.75 | 0.035 | 194.4 | 12 | 33.26 | 153.0 |
| 41 | 117.76 | 257.1 | 1.0 | 0.75 | 0.75 | 0.035 | 194.4 | 12 | 33.13 | 153.0 |
| 42 | 117.34 | 257.1 | 1.0 | 0.75 | 0.75 | 0.035 | 194.4 | 12 | 32.97 | 153.0 |
| 43 | 116.76 | 257.1 | 1.0 | 0.75 | 0.75 | 0.035 | 194.4 | 12 | 32.78 | 153.0 |
| 44 | 116.48 | 269.7 | 1.0 | 0.75 | 0.75 | 0.035 | 194.4 | 12 | 34.95 | 153.0 |
| 45 | 116.69 | 269.7 | 1.0 | 0.75 | 0.75 | 0.035 | 194.4 | 12 | 34.95 | 153.0 |
| 46 | 116.75 | 269.7 | 1.0 | 0.75 | 0.75 | 0.035 | 194.4 | 12 | 34.92 | 153.0 |
| 47 | 116.67 | 269.7 | 1.0 | 0.75 | 0.75 | 0.035 | 194.4 | 12 | 34.85 | 153.0 |
| 48 | 116.45 | 269.7 | 1.0 | 0.75 | 0.75 | 0.035 | 194.4 | 12 | 34.75 | 153.0 |
| 49 | 116.09 | 269.7 | 1.0 | 0.75 | 0.75 | 0.035 | 194.4 | 12 | 34.59 | 153.0 |
| 50 | 110.06 | 236.3 | 2.0 | 0.75 | 0.75 | 0.035 | 165.0 | 12 | 31.23 | 131.4 |
| 51 | 110.47 | 237.0 | 2.0 | 0.75 | 0.75 | 0.035 | 165.0 | 12 | 31.17 | 131.4 |
| 52 | 110.84 | 237.6 | 2.0 | 0.75 | 0.75 | 0.035 | 165.0 | 12 | 31.07 | 131.4 |
| 53 | 111.15 | 237.6 | 2.0 | 0.75 | 0.75 | 0.035 | 165.0 | 12 | 30.42 | 131.4 |
| 54 | 111.52 | 238.6 | 2.0 | 0.75 | 0.75 | 0.035 | 165.0 | 12 | 30.59 | 131.4 |
| 55 | 111.86 | 239.2 | 2.0 | 0.75 | 0.75 | 0.035 | 165.0 | 12 | 30.48 | 131.4 |
| 56 | 112.12 | 239.5 | 2.0 | 0.75 | 0.75 | 0.035 | 165.0 | 12 | 29.99 | 131.4 |
| 57 | 112.38 | 241.0 | 2.0 | 0.75 | 0.75 | 0.035 | 165.0 | 12 | 30.58 | 131.4 |
| 58 | 112.74 | 241.0 | 2.0 | 0.75 | 0.75 | 0.035 | 165.0 | 12 | 29.82 | 131.4 |
| 59 | 113.14 | 241.9 | 2.0 | 0.75 | 0.75 | 0.035 | 165.0 | 12 | 29.87 | 131.4 |
| 60 | 114.19 | 247.3 | 1.0 | 0.75 | 0.75 | 0.035 | 194.4 | 12 | 33.38 | 153.0 |
| 61 | 115.46 | 247.3 | 1.0 | 0.75 | 0.75 | 0.035 | 194.4 | 12 | 33.21 | 153.0 |
| 62 | 121.27 | 234.5 | 5.0 | 0.30 | 0.30 | 0.020 | 30.2 | 18 | 37.17 | 71.9 |
| 63 | 124.35 | 234.6 | 5.0 | 0.30 | 0.15 | 0.035 | 77.0 | 6 | 63.18 | 29.9 |
| 64 | 131.49 | 234.6 | 5.0 | 0.30 | 0.15 | 0.035 | 77.0 | 6 | 66.77 | 29.9 |
| 65 | 143.73 | 234.6 | 5.0 | 0.30 | 0.15 | 0.035 | 77.0 | 6 | 72.70 | 29.9 |
| 66 | 159.23 | 234.6 | 5.0 | 0.30 | 0.15 | 0.035 | 77.0 | 6 | 79.87 | 29.9 |
| 67 | 196.36 | 238.0 | 5.0 | 0.30 | 0.15 | 0.020 | 30.2 | 5 | 98.36 | 29.9 |
| 68 | 241.39 | 234.5 | 5.0 | 0.30 | 0.15 | 0.020 | 30.2 | 5 | 120.44 | 29.9 |
| 69 | 238.33 | 234.5 | 5.0 | 0.30 | 0.15 | 0.020 | 30.2 | 5 | 124.28 | 29.9 |
| 70 | 334.62 | 238.0 | 5.0 | 0.30 | 0.15 | 0.020 | 30.2 | 5 | 168.68 | 29.9 |
| 71 | 285.53 | 246.8 | 5.0 | 0.30 | 0.15 | 0.020 | 30.2 | 6 | 142.94 | 29.9 |
| 72 | 162.96 | 234.6 | 5.0 | 0.30 | 0.15 | 0.035 | 77.0 | 6 | 81.39 | 29.9 |
| 73 | 160.72 | 234.6 | 5.0 | 0.30 | 0.15 | 0.035 | 77.0 | 6 | 80.53 | 29.9 |
| 74 | 155.46 | 234.6 | 5.0 | 0.30 | 0.15 | 0.035 | 77.0 | 6 | 78.23 | 29.9 |
| 75 | 147.09 | 234.6 | 5.0 | 0.30 | 0.15 | 0.035 | 77.0 | 6 | 74.34 | 29.9 |
| 76 | 137.69 | 234.6 | 5.0 | 0.30 | 0.15 | 0.035 | 77.0 | 6 | 69.84 | 29.9 |
| 77 | 128.14 | 234.6 | 5.0 | 0.30 | 0.15 | 0.035 | 77.0 | 6 | 65.18 | 29.9 |
| 78 | 121.66 | 236.3 | 5.0 | 0.30 | 0.15 | 0.035 | 77.0 | 5 | 61.38 | 29.9 |
| 79 | 118.86 | 257.1 | 1.0 | 0.75 | 0.75 | 0.035 | 194.4 | 12 | 33.42 | 153.0 |

| | | | | | | | | | | |
|-----|--------|-------|-----|------|------|-------|-------|----|--------|-------|
| 80 | 118.51 | 253.3 | 2.0 | 0.75 | 0.75 | 0.035 | 165.0 | 12 | 33.20 | 131.4 |
| 81 | 118.52 | 253.3 | 2.0 | 0.75 | 0.75 | 0.035 | 165.0 | 12 | 32.81 | 131.4 |
| 82 | 120.32 | 266.9 | 5.0 | 0.75 | 0.75 | 0.020 | 30.2 | 8 | 23.58 | 139.5 |
| 83 | 123.10 | 266.9 | 5.0 | 0.75 | 0.75 | 0.020 | 30.2 | 12 | 25.44 | 122.1 |
| 84 | 123.95 | 266.9 | 5.0 | 0.75 | 0.75 | 0.020 | 30.2 | 12 | 32.39 | 122.1 |
| 85 | 122.75 | 266.9 | 5.0 | 0.75 | 0.75 | 0.020 | 30.2 | 12 | 39.10 | 122.1 |
| 86 | 120.34 | 266.9 | 5.0 | 0.75 | 0.75 | 0.020 | 30.2 | 12 | 44.42 | 122.1 |
| 87 | 117.34 | 266.9 | 5.0 | 0.75 | 0.75 | 0.020 | 30.2 | 12 | 48.29 | 122.1 |
| 88 | 133.66 | 237.6 | 1.0 | 0.30 | 0.30 | 0.035 | 194.4 | 12 | 28.74 | 153.0 |
| 89 | 134.01 | 238.0 | 1.0 | 0.30 | 0.30 | 0.035 | 194.4 | 12 | 28.18 | 153.0 |
| 90 | 134.48 | 238.0 | 1.0 | 0.30 | 0.30 | 0.035 | 194.4 | 12 | 27.14 | 153.0 |
| 91 | 135.01 | 238.0 | 1.0 | 0.30 | 0.30 | 0.035 | 194.4 | 12 | 26.11 | 153.0 |
| 92 | 135.73 | 239.5 | 1.0 | 0.30 | 0.30 | 0.035 | 194.4 | 12 | 27.31 | 153.0 |
| 93 | 136.42 | 239.5 | 1.0 | 0.30 | 0.30 | 0.035 | 194.4 | 12 | 26.28 | 153.0 |
| 94 | 137.24 | 239.6 | 1.0 | 0.30 | 0.30 | 0.035 | 194.4 | 12 | 25.31 | 153.0 |
| 95 | 138.13 | 240.3 | 1.0 | 0.30 | 0.30 | 0.035 | 194.4 | 12 | 25.37 | 153.0 |
| 96 | 138.41 | 240.4 | 1.0 | 0.30 | 0.30 | 0.035 | 194.4 | 18 | 25.08 | 98.8 |
| 97 | 138.23 | 240.4 | 1.0 | 0.30 | 0.30 | 0.035 | 194.4 | 18 | 25.43 | 98.8 |
| 98 | 138.32 | 241.9 | 1.0 | 0.30 | 0.30 | 0.035 | 194.4 | 18 | 25.53 | 98.8 |
| 99 | 145.01 | 247.3 | 1.0 | 0.30 | 0.30 | 0.035 | 194.4 | 12 | 31.29 | 153.0 |
| 100 | 148.66 | 244.2 | 1.0 | 0.30 | 0.30 | 0.035 | 194.4 | 12 | 26.23 | 153.0 |
| 101 | 148.34 | 244.2 | 1.0 | 0.30 | 0.30 | 0.035 | 194.4 | 18 | 25.85 | 98.8 |
| 102 | 148.09 | 244.2 | 1.0 | 0.30 | 0.30 | 0.035 | 194.4 | 18 | 25.87 | 98.8 |
| 103 | 147.66 | 244.2 | 1.0 | 0.30 | 0.30 | 0.035 | 194.4 | 18 | 25.84 | 98.8 |
| 104 | 148.03 | 247.3 | 1.0 | 0.30 | 0.30 | 0.035 | 194.4 | 12 | 28.95 | 153.0 |
| 105 | 148.04 | 247.3 | 1.0 | 0.30 | 0.30 | 0.035 | 194.4 | 12 | 28.50 | 153.0 |
| 106 | 147.49 | 247.3 | 1.0 | 0.30 | 0.30 | 0.035 | 194.4 | 12 | 28.06 | 153.0 |
| 107 | 146.52 | 247.3 | 1.0 | 0.30 | 0.30 | 0.035 | 194.4 | 12 | 27.69 | 153.0 |
| 108 | 145.11 | 247.3 | 1.0 | 0.30 | 0.30 | 0.035 | 194.4 | 12 | 27.28 | 153.0 |
| 109 | 143.44 | 247.3 | 1.0 | 0.30 | 0.30 | 0.035 | 194.4 | 12 | 26.89 | 153.0 |
| 110 | 142.69 | 253.4 | 1.0 | 0.30 | 0.30 | 0.035 | 194.4 | 12 | 35.31 | 153.0 |
| 111 | 143.16 | 253.4 | 1.0 | 0.30 | 0.30 | 0.035 | 194.4 | 12 | 35.12 | 153.0 |
| 112 | 143.38 | 253.4 | 1.0 | 0.30 | 0.30 | 0.035 | 194.4 | 12 | 34.89 | 153.0 |
| 113 | 143.44 | 253.4 | 1.0 | 0.30 | 0.30 | 0.035 | 194.4 | 12 | 34.63 | 153.0 |
| 114 | 143.38 | 253.4 | 1.0 | 0.30 | 0.30 | 0.035 | 194.4 | 12 | 34.35 | 153.0 |
| 115 | 241.50 | 236.3 | 4.0 | 0.30 | 0.30 | 0.020 | 68.9 | 12 | 176.55 | 127.8 |
| 116 | 247.92 | 236.3 | 4.0 | 0.30 | 0.30 | 0.020 | 68.9 | 12 | 183.24 | 127.8 |
| 117 | 253.54 | 236.3 | 4.0 | 0.30 | 0.30 | 0.020 | 68.9 | 12 | 188.64 | 127.8 |
| 118 | 258.44 | 236.3 | 4.0 | 0.30 | 0.30 | 0.020 | 68.9 | 12 | 192.73 | 127.8 |
| 119 | 263.65 | 236.3 | 4.0 | 0.30 | 0.30 | 0.020 | 68.9 | 12 | 196.35 | 127.8 |
| 120 | 265.43 | 236.3 | 4.0 | 0.30 | 0.30 | 0.020 | 68.9 | 12 | 194.98 | 127.8 |
| 121 | 265.00 | 240.0 | 4.0 | 0.30 | 0.30 | 0.035 | 106.3 | 18 | 91.99 | 74.5 |
| 122 | 270.46 | 240.0 | 4.0 | 0.30 | 0.30 | 0.035 | 106.3 | 18 | 97.38 | 74.5 |
| 123 | 272.66 | 240.0 | 4.0 | 0.30 | 0.30 | 0.035 | 106.3 | 18 | 99.82 | 74.5 |
| 124 | 274.77 | 240.0 | 4.0 | 0.30 | 0.30 | 0.035 | 106.3 | 18 | 102.54 | 74.5 |
| 125 | 285.96 | 234.5 | 4.0 | 0.30 | 0.30 | 0.020 | 68.9 | 8 | 78.00 | 146.5 |
| 126 | 305.71 | 238.0 | 4.0 | 0.30 | 0.30 | 0.020 | 68.9 | 18 | 90.58 | 81.5 |
| 127 | 307.63 | 240.5 | 4.0 | 0.30 | 0.30 | 0.020 | 68.9 | 18 | 89.79 | 81.5 |
| 128 | 299.63 | 240.9 | 5.0 | 0.30 | 0.15 | 0.035 | 77.0 | 18 | 176.22 | 71.6 |
| 129 | 289.97 | 240.9 | 5.0 | 0.30 | 0.15 | 0.035 | 77.0 | 18 | 169.37 | 71.6 |
| 130 | 317.56 | 254.9 | 4.0 | 0.30 | 0.30 | 0.020 | 68.9 | 8 | 80.22 | 146.5 |
| 131 | 303.22 | 240.9 | 5.0 | 0.30 | 0.15 | 0.035 | 77.0 | 18 | 179.63 | 71.6 |
| 132 | 295.42 | 240.9 | 5.0 | 0.30 | 0.15 | 0.035 | 77.0 | 18 | 173.98 | 71.6 |
| 133 | 300.92 | 269.7 | 4.0 | 0.30 | 0.30 | 0.020 | 68.9 | 8 | 79.82 | 146.5 |
| 134 | 317.71 | 269.7 | 4.0 | 0.30 | 0.30 | 0.020 | 68.9 | 8 | 88.33 | 146.5 |
| 135 | 302.19 | 269.7 | 4.0 | 0.30 | 0.30 | 0.020 | 68.9 | 8 | 82.67 | 146.5 |
| 136 | 285.48 | 269.7 | 4.0 | 0.30 | 0.30 | 0.020 | 68.9 | 8 | 74.98 | 146.5 |
| 137 | 258.46 | 243.2 | 4.0 | 0.30 | 0.30 | 0.035 | 106.3 | 18 | 86.92 | 74.5 |
| 138 | 255.35 | 243.2 | 4.0 | 0.30 | 0.30 | 0.035 | 106.3 | 18 | 83.25 | 74.5 |
| 139 | 251.05 | 243.2 | 4.0 | 0.30 | 0.30 | 0.035 | 106.3 | 18 | 79.13 | 74.5 |

| | | | | | | | | | | |
|-----|--------|-------|-----|------|------|-------|-------|----|--------|-------|
| 140 | 245.95 | 257.1 | 4.0 | 0.30 | 0.30 | 0.020 | 68.9 | 7 | 91.82 | 118.8 |
| 141 | 279.20 | 257.1 | 4.0 | 0.30 | 0.30 | 0.020 | 68.9 | 7 | 86.68 | 118.8 |
| 142 | 402.20 | 238.5 | 3.0 | 0.30 | 0.08 | 0.035 | 135.7 | 7 | 119.74 | 112.7 |
| 143 | 412.77 | 238.5 | 4.0 | 0.30 | 0.15 | 0.035 | 106.3 | 7 | 136.47 | 106.8 |
| 144 | 426.70 | 238.5 | 4.0 | 0.30 | 0.15 | 0.035 | 106.3 | 7 | 145.63 | 106.8 |
| 145 | 439.52 | 253.3 | 4.0 | 0.30 | 0.15 | 0.035 | 106.3 | 12 | 386.09 | 114.3 |
| 146 | 449.23 | 238.5 | 4.0 | 0.30 | 0.15 | 0.035 | 106.3 | 7 | 162.86 | 106.8 |
| 147 | 482.05 | 238.0 | 5.0 | 0.30 | 0.15 | 0.035 | 77.0 | 12 | 436.01 | 109.6 |
| 148 | 502.44 | 238.3 | 5.0 | 0.30 | 0.15 | 0.035 | 77.0 | 12 | 453.45 | 109.6 |
| 149 | 515.45 | 240.9 | 5.0 | 0.30 | 0.15 | 0.035 | 77.0 | 12 | 464.11 | 109.6 |
| 150 | 500.11 | 243.9 | 5.0 | 0.30 | 0.15 | 0.035 | 77.0 | 12 | 451.62 | 109.6 |
| 151 | 491.20 | 240.0 | 4.0 | 0.30 | 0.15 | 0.035 | 106.3 | 8 | 148.53 | 129.9 |
| 152 | 500.56 | 240.0 | 4.0 | 0.30 | 0.15 | 0.035 | 106.3 | 7 | 152.83 | 106.8 |
| 153 | 509.94 | 240.0 | 4.0 | 0.30 | 0.15 | 0.035 | 106.3 | 7 | 164.39 | 106.8 |
| 154 | 516.25 | 240.2 | 4.0 | 0.30 | 0.15 | 0.035 | 106.3 | 7 | 169.27 | 106.8 |
| 155 | 520.24 | 240.2 | 4.0 | 0.30 | 0.15 | 0.035 | 106.3 | 7 | 180.86 | 106.8 |
| 156 | 520.93 | 240.2 | 4.0 | 0.30 | 0.15 | 0.035 | 106.3 | 7 | 190.12 | 106.8 |
| 157 | 500.03 | 240.6 | 4.0 | 0.30 | 0.15 | 0.035 | 106.3 | 7 | 197.45 | 106.8 |
| 158 | 494.63 | 241.9 | 4.0 | 0.30 | 0.15 | 0.035 | 106.3 | 7 | 153.04 | 106.8 |
| 159 | 500.57 | 269.7 | 5.0 | 0.30 | 0.15 | 0.035 | 77.0 | 12 | 455.92 | 109.6 |
| 160 | 507.05 | 241.9 | 4.0 | 0.30 | 0.15 | 0.035 | 106.3 | 8 | 151.43 | 129.9 |
| 161 | 509.19 | 241.9 | 4.0 | 0.30 | 0.15 | 0.035 | 106.3 | 7 | 150.35 | 106.8 |
| 162 | 507.64 | 241.9 | 4.0 | 0.30 | 0.15 | 0.035 | 106.3 | 7 | 153.17 | 106.8 |
| 163 | 530.19 | 269.7 | 5.0 | 0.30 | 0.30 | 0.035 | 77.0 | 8 | 236.43 | 124.0 |
| 164 | 494.43 | 241.9 | 4.0 | 0.30 | 0.15 | 0.035 | 106.3 | 7 | 161.58 | 106.8 |
| 165 | 481.89 | 241.9 | 4.0 | 0.30 | 0.15 | 0.035 | 106.3 | 7 | 165.01 | 106.8 |
| 166 | 468.46 | 243.2 | 4.0 | 0.30 | 0.15 | 0.035 | 106.3 | 8 | 150.24 | 129.9 |
| 167 | 457.42 | 243.2 | 4.0 | 0.30 | 0.15 | 0.035 | 106.3 | 8 | 143.56 | 129.9 |
| 168 | 443.20 | 243.2 | 4.0 | 0.30 | 0.15 | 0.035 | 106.3 | 8 | 135.68 | 129.9 |
| 169 | 427.13 | 243.2 | 4.0 | 0.30 | 0.15 | 0.035 | 106.3 | 7 | 127.85 | 106.8 |
| 170 | 416.62 | 244.2 | 3.0 | 0.30 | 0.08 | 0.035 | 135.7 | 7 | 123.36 | 112.7 |
| 171 | 437.37 | 256.1 | 5.0 | 0.30 | 0.15 | 0.035 | 77.0 | 8 | 189.29 | 124.0 |
| 172 | 521.25 | 253.3 | 3.0 | 0.30 | 0.08 | 0.035 | 135.7 | 12 | 459.48 | 120.9 |
| 173 | 532.80 | 253.3 | 3.0 | 0.30 | 0.08 | 0.035 | 135.7 | 12 | 467.62 | 120.9 |
| 174 | 542.38 | 253.3 | 3.0 | 0.30 | 0.08 | 0.035 | 135.7 | 12 | 474.15 | 120.9 |
| 175 | 551.26 | 253.3 | 3.0 | 0.30 | 0.08 | 0.035 | 135.7 | 12 | 480.10 | 120.9 |
| 176 | 557.78 | 253.3 | 3.0 | 0.30 | 0.08 | 0.035 | 135.7 | 12 | 484.08 | 120.9 |
| 177 | 561.68 | 253.3 | 3.0 | 0.30 | 0.08 | 0.035 | 135.7 | 12 | 486.21 | 120.9 |
| 178 | 565.68 | 253.3 | 3.0 | 0.30 | 0.08 | 0.035 | 135.7 | 12 | 488.12 | 120.9 |
| 179 | 567.82 | 253.3 | 3.0 | 0.30 | 0.08 | 0.035 | 135.7 | 12 | 488.96 | 120.9 |
| 180 | 566.49 | 253.3 | 3.0 | 0.30 | 0.08 | 0.035 | 135.7 | 12 | 488.51 | 120.9 |
| 181 | 569.40 | 253.3 | 3.0 | 0.30 | 0.08 | 0.035 | 135.7 | 12 | 489.54 | 120.9 |
| 182 | 602.53 | 237.6 | 4.0 | 0.30 | 0.15 | 0.035 | 106.3 | 8 | 272.20 | 129.9 |
| 183 | 633.62 | 238.5 | 4.0 | 0.30 | 0.30 | 0.035 | 106.3 | 8 | 308.75 | 129.9 |
| 184 | 647.36 | 240.6 | 4.0 | 0.30 | 0.30 | 0.035 | 106.3 | 8 | 340.48 | 129.9 |
| 185 | 611.08 | 243.9 | 4.0 | 0.30 | 0.15 | 0.035 | 106.3 | 8 | 354.09 | 129.9 |
| 186 | 611.00 | 247.0 | 4.0 | 0.30 | 0.15 | 0.035 | 106.3 | 8 | 345.91 | 129.9 |
| 187 | 623.49 | 253.3 | 4.0 | 0.30 | 0.15 | 0.035 | 106.3 | 1 | 268.00 | 142.0 |
| 188 | 698.32 | 255.0 | 4.0 | 0.30 | 0.15 | 0.035 | 106.3 | 8 | 303.27 | 129.9 |
| 189 | 712.88 | 257.1 | 4.0 | 0.30 | 0.15 | 0.035 | 106.3 | 8 | 328.92 | 129.9 |
| 190 | 607.33 | 257.1 | 4.0 | 0.30 | 0.15 | 0.035 | 106.3 | 8 | 281.05 | 129.9 |
| 191 | 556.37 | 247.0 | 2.0 | 0.30 | 0.04 | 0.035 | 165.0 | 7 | 119.57 | 122.0 |
| 192 | 561.02 | 269.7 | 3.0 | 0.30 | 0.08 | 0.020 | 107.6 | 8 | 157.08 | 156.4 |
| 193 | 553.85 | 247.0 | 2.0 | 0.30 | 0.04 | 0.035 | 165.0 | 7 | 130.14 | 122.0 |
| 194 | 550.66 | 247.0 | 2.0 | 0.30 | 0.04 | 0.035 | 165.0 | 7 | 134.64 | 122.0 |
| 195 | 545.66 | 247.0 | 2.0 | 0.30 | 0.04 | 0.035 | 165.0 | 7 | 138.85 | 122.0 |
| 196 | 602.13 | 257.1 | 4.0 | 0.30 | 0.15 | 0.035 | 106.3 | 8 | 241.09 | 129.9 |
| 197 | 627.51 | 257.1 | 4.0 | 0.30 | 0.15 | 0.035 | 106.3 | 8 | 245.69 | 129.9 |
| 198 | 669.01 | 244.2 | 2.0 | 0.30 | 0.04 | 0.035 | 165.0 | 12 | 272.46 | 131.4 |
| 199 | 670.66 | 247.0 | 2.0 | 0.30 | 0.04 | 0.035 | 165.0 | 12 | 351.78 | 131.4 |

| | | | | | | | | | | |
|-----|--------|-------|-----|------|------|-------|-------|----|--------|-------|
| 200 | 675.76 | 247.0 | 2.0 | 0.30 | 0.04 | 0.035 | 165.0 | 12 | 343.78 | 131.4 |
| 201 | 680.53 | 247.0 | 2.0 | 0.30 | 0.04 | 0.035 | 165.0 | 12 | 336.33 | 131.4 |
| 202 | 683.38 | 247.0 | 2.0 | 0.30 | 0.04 | 0.035 | 165.0 | 12 | 328.14 | 131.4 |
| 203 | 685.28 | 247.0 | 2.0 | 0.30 | 0.04 | 0.035 | 165.0 | 12 | 319.17 | 131.4 |
| 204 | 685.54 | 247.0 | 2.0 | 0.30 | 0.04 | 0.035 | 165.0 | 12 | 309.63 | 131.4 |
| 205 | 685.55 | 247.0 | 2.0 | 0.30 | 0.04 | 0.035 | 165.0 | 12 | 295.57 | 131.4 |
| 206 | 683.86 | 247.0 | 2.0 | 0.30 | 0.04 | 0.035 | 165.0 | 12 | 278.48 | 131.4 |
| 207 | 678.80 | 247.0 | 2.0 | 0.30 | 0.04 | 0.035 | 165.0 | 12 | 259.68 | 131.4 |
| 208 | 670.17 | 247.0 | 2.0 | 0.30 | 0.04 | 0.035 | 165.0 | 12 | 238.99 | 131.4 |
| 209 | 688.43 | 247.0 | 2.0 | 0.30 | 0.04 | 0.035 | 165.0 | 12 | 264.14 | 131.4 |
| 210 | 698.26 | 247.0 | 2.0 | 0.30 | 0.04 | 0.035 | 165.0 | 8 | 195.12 | 151.0 |
| 211 | 678.61 | 247.0 | 2.0 | 0.30 | 0.04 | 0.035 | 165.0 | 8 | 201.67 | 151.0 |
| 212 | 685.08 | 247.0 | 2.0 | 0.30 | 0.04 | 0.035 | 165.0 | 8 | 202.99 | 151.0 |
| 213 | 680.30 | 253.3 | 2.0 | 0.30 | 0.04 | 0.035 | 165.0 | 12 | 393.51 | 131.4 |
| 214 | 679.91 | 253.3 | 2.0 | 0.30 | 0.04 | 0.035 | 165.0 | 12 | 388.35 | 131.4 |
| 215 | 681.08 | 253.3 | 2.0 | 0.30 | 0.04 | 0.035 | 165.0 | 12 | 377.15 | 131.4 |
| 216 | 682.29 | 253.3 | 2.0 | 0.30 | 0.04 | 0.035 | 165.0 | 12 | 364.75 | 131.4 |
| 217 | 683.01 | 253.3 | 2.0 | 0.30 | 0.04 | 0.035 | 165.0 | 12 | 352.91 | 131.4 |
| 218 | 682.97 | 253.3 | 2.0 | 0.30 | 0.04 | 0.035 | 165.0 | 12 | 338.22 | 131.4 |
| 219 | 682.78 | 253.3 | 2.0 | 0.30 | 0.04 | 0.035 | 165.0 | 12 | 321.83 | 131.4 |
| 220 | 747.32 | 244.2 | 2.0 | 0.30 | 0.04 | 0.035 | 165.0 | 12 | 258.58 | 131.4 |
| 221 | 754.13 | 244.2 | 2.0 | 0.30 | 0.04 | 0.035 | 165.0 | 12 | 247.83 | 131.4 |
| 222 | 755.57 | 244.2 | 2.0 | 0.30 | 0.04 | 0.035 | 165.0 | 8 | 236.26 | 151.0 |
| 223 | 758.09 | 247.0 | 2.0 | 0.30 | 0.04 | 0.035 | 165.0 | 12 | 312.65 | 131.4 |
| 224 | 763.67 | 247.0 | 2.0 | 0.30 | 0.04 | 0.035 | 165.0 | 12 | 302.23 | 131.4 |
| 225 | 768.92 | 247.0 | 2.0 | 0.30 | 0.04 | 0.035 | 165.0 | 12 | 291.14 | 131.4 |
| 226 | 778.58 | 247.0 | 2.0 | 0.30 | 0.04 | 0.035 | 165.0 | 12 | 283.72 | 131.4 |
| 227 | 779.19 | 247.0 | 2.0 | 0.30 | 0.04 | 0.035 | 165.0 | 12 | 265.96 | 131.4 |
| 228 | 788.88 | 247.0 | 2.0 | 0.30 | 0.04 | 0.035 | 165.0 | 12 | 261.73 | 131.4 |
| 229 | 814.72 | 247.0 | 2.0 | 0.30 | 0.04 | 0.035 | 165.0 | 12 | 280.08 | 131.4 |
| 230 | 844.00 | 247.0 | 2.0 | 0.30 | 0.04 | 0.035 | 165.0 | 12 | 300.83 | 131.4 |
| 231 | 737.97 | 247.0 | 2.0 | 0.30 | 0.04 | 0.035 | 165.0 | 8 | 275.67 | 151.0 |
| 232 | 737.63 | 247.0 | 2.0 | 0.30 | 0.04 | 0.035 | 165.0 | 8 | 275.61 | 151.0 |
| 233 | 739.26 | 247.0 | 2.0 | 0.30 | 0.04 | 0.035 | 165.0 | 8 | 275.73 | 151.0 |
| 234 | 735.40 | 247.0 | 2.0 | 0.30 | 0.04 | 0.035 | 165.0 | 8 | 275.76 | 151.0 |
| 235 | 734.74 | 253.3 | 2.0 | 0.30 | 0.04 | 0.035 | 165.0 | 12 | 332.92 | 131.4 |
| 236 | 736.20 | 253.3 | 2.0 | 0.30 | 0.04 | 0.035 | 165.0 | 12 | 320.57 | 131.4 |
| 237 | 741.01 | 253.3 | 2.0 | 0.30 | 0.04 | 0.035 | 165.0 | 12 | 306.44 | 131.4 |
| 238 | 743.11 | 253.3 | 2.0 | 0.30 | 0.04 | 0.035 | 165.0 | 12 | 291.72 | 131.4 |
| 239 | 699.98 | 240.4 | 1.0 | 0.30 | 0.04 | 0.035 | 194.4 | 12 | 285.89 | 153.0 |
| 240 | 707.58 | 241.9 | 1.0 | 0.30 | 0.04 | 0.035 | 194.4 | 12 | 295.96 | 153.0 |
| 241 | 718.49 | 241.9 | 1.0 | 0.30 | 0.04 | 0.035 | 194.4 | 12 | 296.25 | 153.0 |
| 242 | 731.10 | 242.2 | 1.0 | 0.30 | 0.04 | 0.035 | 194.4 | 12 | 297.24 | 153.0 |
| 243 | 742.64 | 244.0 | 1.0 | 0.30 | 0.04 | 0.035 | 194.4 | 12 | 309.33 | 153.0 |
| 244 | 751.80 | 244.2 | 1.0 | 0.30 | 0.04 | 0.035 | 194.4 | 12 | 308.43 | 153.0 |
| 245 | 759.02 | 244.2 | 1.0 | 0.30 | 0.04 | 0.035 | 194.4 | 12 | 305.17 | 153.0 |
| 246 | 764.17 | 247.3 | 1.0 | 0.30 | 0.04 | 0.035 | 194.4 | 12 | 327.52 | 153.0 |
| 247 | 771.97 | 247.3 | 1.0 | 0.30 | 0.04 | 0.035 | 194.4 | 12 | 322.56 | 153.0 |
| 248 | 773.85 | 247.3 | 1.0 | 0.30 | 0.04 | 0.035 | 194.4 | 12 | 314.36 | 153.0 |
| 249 | 778.89 | 247.3 | 1.0 | 0.30 | 0.04 | 0.035 | 194.4 | 12 | 321.90 | 153.0 |
| 250 | 781.01 | 247.3 | 1.0 | 0.30 | 0.04 | 0.035 | 194.4 | 12 | 328.41 | 153.0 |
| 251 | 765.57 | 253.4 | 1.0 | 0.30 | 0.04 | 0.035 | 194.4 | 12 | 308.27 | 153.0 |
| 252 | 770.53 | 253.4 | 1.0 | 0.30 | 0.04 | 0.035 | 194.4 | 12 | 310.33 | 153.0 |
| 253 | 772.49 | 253.4 | 1.0 | 0.30 | 0.04 | 0.035 | 194.4 | 12 | 312.13 | 153.0 |
| 254 | 772.85 | 253.4 | 1.0 | 0.30 | 0.04 | 0.035 | 194.4 | 12 | 311.74 | 153.0 |
| 255 | 768.30 | 253.4 | 1.0 | 0.30 | 0.04 | 0.035 | 194.4 | 12 | 303.44 | 153.0 |
| 256 | 761.40 | 255.0 | 1.0 | 0.30 | 0.04 | 0.035 | 194.4 | 12 | 309.50 | 153.0 |
| 257 | 754.58 | 255.0 | 1.0 | 0.30 | 0.04 | 0.035 | 194.4 | 12 | 297.55 | 153.0 |
| 258 | 746.47 | 255.0 | 1.0 | 0.30 | 0.04 | 0.035 | 194.4 | 12 | 286.21 | 153.0 |
| 259 | 741.04 | 257.1 | 1.0 | 0.30 | 0.04 | 0.035 | 194.4 | 12 | 298.71 | 153.0 |

| | | | | | | | | | | |
|-----|--------|-------|-----|------|------|-------|-------|----|--------|-------|
| 260 | 695.55 | 242.2 | 1.0 | 0.30 | 0.04 | 0.035 | 194.4 | 12 | 248.30 | 153.0 |
| 261 | 713.89 | 244.0 | 1.0 | 0.30 | 0.04 | 0.035 | 194.4 | 12 | 257.56 | 153.0 |
| 262 | 726.27 | 244.2 | 1.0 | 0.30 | 0.04 | 0.035 | 194.4 | 12 | 254.57 | 153.0 |
| 263 | 737.77 | 247.3 | 1.0 | 0.30 | 0.04 | 0.035 | 194.4 | 12 | 270.89 | 153.0 |
| 264 | 746.69 | 247.3 | 1.0 | 0.30 | 0.04 | 0.035 | 194.4 | 12 | 272.56 | 153.0 |
| 265 | 747.86 | 247.3 | 1.0 | 0.30 | 0.04 | 0.035 | 194.4 | 12 | 274.93 | 153.0 |
| 266 | 725.26 | 253.4 | 1.0 | 0.30 | 0.04 | 0.035 | 194.4 | 12 | 249.94 | 153.0 |
| 267 | 721.21 | 253.4 | 1.0 | 0.30 | 0.04 | 0.035 | 194.4 | 12 | 240.96 | 153.0 |
| 268 | 713.12 | 255.0 | 1.0 | 0.30 | 0.04 | 0.035 | 194.4 | 12 | 241.79 | 153.0 |
| 269 | 703.67 | 257.1 | 1.0 | 0.30 | 0.04 | 0.035 | 194.4 | 12 | 248.48 | 153.0 |
| 270 | 663.70 | 243.0 | 1.0 | 0.30 | 0.08 | 0.020 | 185.0 | 12 | 229.97 | 174.4 |
| 271 | 687.27 | 244.2 | 1.0 | 0.30 | 0.08 | 0.020 | 185.0 | 12 | 238.57 | 174.4 |
| 272 | 694.67 | 243.0 | 1.0 | 0.30 | 0.08 | 0.020 | 185.0 | 12 | 239.53 | 174.4 |
| 273 | 684.65 | 243.0 | 1.0 | 0.30 | 0.08 | 0.020 | 185.0 | 12 | 231.18 | 174.4 |
| 274 | 629.72 | 244.3 | 1.0 | 0.30 | 0.15 | 0.020 | 185.0 | 12 | 206.95 | 174.4 |
| 275 | 708.72 | 253.4 | 1.0 | 0.30 | 0.08 | 0.020 | 185.0 | 12 | 252.21 | 174.4 |
| 276 | 721.55 | 254.9 | 1.0 | 0.30 | 0.08 | 0.020 | 185.0 | 12 | 248.16 | 174.4 |
| 277 | 710.25 | 257.1 | 1.0 | 0.30 | 0.08 | 0.020 | 185.0 | 12 | 258.12 | 174.4 |
| 278 | 697.98 | 254.9 | 1.0 | 0.30 | 0.08 | 0.020 | 185.0 | 12 | 251.55 | 174.4 |
| 279 | 676.79 | 253.4 | 1.0 | 0.30 | 0.08 | 0.020 | 185.0 | 12 | 244.83 | 174.4 |
| 280 | 531.93 | 247.2 | 2.0 | 0.30 | 0.04 | 0.020 | 146.3 | 1 | 179.46 | 178.6 |
| 281 | 540.08 | 247.2 | 2.0 | 0.30 | 0.04 | 0.020 | 146.3 | 1 | 177.88 | 178.6 |
| 282 | 559.90 | 247.2 | 2.0 | 0.30 | 0.04 | 0.020 | 146.3 | 1 | 183.55 | 178.6 |
| 283 | 545.75 | 247.2 | 2.0 | 0.30 | 0.04 | 0.020 | 146.3 | 8 | 195.35 | 172.0 |
| 284 | 564.91 | 253.4 | 2.0 | 0.30 | 0.04 | 0.020 | 146.3 | 1 | 184.04 | 178.6 |
| 285 | 544.13 | 253.4 | 2.0 | 0.30 | 0.04 | 0.020 | 146.3 | 12 | 186.86 | 148.4 |
| 286 | 546.32 | 247.2 | 2.0 | 0.30 | 0.04 | 0.020 | 146.3 | 1 | 183.39 | 178.6 |
| 287 | 555.63 | 247.2 | 2.0 | 0.30 | 0.04 | 0.020 | 146.3 | 1 | 184.12 | 178.6 |
| 288 | 542.69 | 253.4 | 2.0 | 0.30 | 0.04 | 0.020 | 146.3 | 12 | 202.55 | 148.4 |

RECEPTOR SUMMARY FOR UNSTABLE HOURS

| REC # | CONC UG/M**3 | WD DEG | WS M/S | ZI M | W* M/S | L M | <----- PEAK SOURCE -----> | | | |
|----------|-----------------|-----------|-----------|---------|-----------|--------|---------------------------|--------|-------|----------|
| | | | | | | | NS UG/M**3 | SRC | CTRIB | HPL M |
| 1 | 76.54 | 92.2 | 1.0 | 265.9 | 0.24 | -50.0 | 20 | 76.54 | 239.3 | 0.39 |
| 2 | 57.39 | 92.2 | 1.0 | 265.9 | 0.24 | -50.0 | 20 | 57.39 | 239.3 | 0.39 |
| 3 | 242.56 | 254.8 | 1.0 | 111.9 | 1.52 | -10.0 | 12 | 209.28 | 100.7 | 0.92 |
| 4 | 333.62 | 254.8 | 2.0 | 111.9 | 1.52 | -10.0 | 12 | 299.75 | 100.7 | 0.77 |
| 5 | 312.49 | 266.9 | 1.0 | 223.7 | 1.91 | -10.0 | 7 | 96.62 | 201.4 | 0.00 |
| 6 | 348.59 | 241.8 | 2.0 | 111.9 | 1.52 | -10.0 | 18 | 137.75 | 98.0 | 0.06 |
| 7 | 348.17 | 266.9 | 1.0 | 265.9 | 0.71 | -50.0 | 8 | 113.08 | 239.3 | 0.00 |
| 8 | 355.15 | 266.9 | 1.0 | 265.9 | 0.58 | -90.0 | 8 | 112.20 | 239.3 | 0.00 |
| 9 | 431.73 | 266.9 | 1.0 | 223.7 | 0.38 | -10.0 | 8 | 127.26 | 201.4 | 0.21 |
| 10 | 409.34 | 266.9 | 1.0 | 265.9 | 0.41 | -10.0 | 8 | 128.91 | 239.3 | 0.00 |
| 11 | 662.56 | 266.9 | 1.0 | 223.7 | 0.22 | -50.0 | 8 | 210.70 | 201.4 | 0.21 |
| 12 | 524.67 | 240.5 | 1.0 | 223.7 | 0.92 | -90.0 | 12 | 261.16 | 201.4 | 0.00 |
| 13 | 522.13 | 240.5 | 1.0 | 223.7 | 0.67 | -50.0 | 12 | 341.59 | 201.4 | 0.00 |
| 14 | 511.94 | 240.5 | 1.0 | 223.7 | 0.67 | -50.0 | 12 | 358.16 | 201.4 | 0.00 |
| 15 | 485.77 | 240.5 | 1.0 | 223.7 | 0.55 | -90.0 | 12 | 395.92 | 201.4 | 0.00 |
| 16 | 392.55 | 240.5 | 1.0 | 223.7 | 0.55 | -90.0 | 12 | 330.37 | 201.4 | 0.00 |
| 17 | 360.02 | 240.5 | 1.0 | 223.7 | 0.55 | -90.0 | 12 | 282.72 | 201.4 | 0.00 |
| 18 | 430.00 | 240.5 | 1.0 | 223.7 | 0.38 | -10.0 | 12 | 368.37 | 201.4 | 0.00 |
| 19 | 341.94 | 240.5 | 1.0 | 223.7 | 0.38 | -10.0 | 12 | 301.30 | 201.4 | 0.00 |
| 20 | 302.99 | 240.5 | 1.0 | 223.7 | 0.38 | -10.0 | 12 | 264.70 | 201.4 | 0.00 |
| 21 | 341.79 | 240.7 | 1.0 | 111.9 | 0.18 | -50.0 | 18 | 95.32 | 100.7 | 0.36 |
| 22 | 390.94 | 240.5 | 1.0 | 223.7 | 0.38 | -10.0 | 12 | 307.76 | 201.4 | 0.00 |

| | | | | | | | | | | |
|----|---------|-------|-----|-------|------|-------|----|--------|-------|------|
| 23 | 490.01 | 240.5 | 1.0 | 223.7 | 0.38 | -10.0 | 12 | 351.14 | 201.4 | 0.00 |
| 24 | 567.39 | 240.5 | 1.0 | 223.7 | 0.38 | -10.0 | 12 | 352.26 | 201.4 | 0.00 |
| 25 | 596.63 | 240.5 | 1.0 | 223.7 | 0.38 | -10.0 | 12 | 293.73 | 201.4 | 0.00 |
| 26 | 565.66 | 240.5 | 1.0 | 223.7 | 0.55 | -90.0 | 12 | 172.44 | 201.4 | 0.00 |
| 27 | 614.12 | 240.5 | 1.0 | 223.7 | 0.55 | -90.0 | 8 | 169.25 | 201.4 | 0.21 |
| 28 | 666.83 | 240.5 | 1.0 | 223.7 | 0.55 | -90.0 | 8 | 199.69 | 201.4 | 0.21 |
| 29 | 667.10 | 240.5 | 1.0 | 223.7 | 0.55 | -90.0 | 8 | 202.87 | 201.4 | 0.21 |
| 30 | 648.27 | 240.5 | 1.0 | 223.7 | 0.67 | -50.0 | 8 | 210.02 | 201.4 | 0.21 |
| 31 | 685.52 | 240.5 | 1.0 | 223.7 | 0.92 | -90.0 | 8 | 211.03 | 201.4 | 0.21 |
| 32 | 693.40 | 240.5 | 1.0 | 265.9 | 1.18 | -50.0 | 8 | 202.43 | 239.3 | 0.00 |
| 33 | 689.21 | 253.7 | 1.0 | 265.9 | 1.18 | -50.0 | 8 | 205.18 | 239.3 | 0.00 |
| 34 | 700.71 | 266.9 | 1.0 | 223.7 | 0.92 | -90.0 | 8 | 232.33 | 201.4 | 0.21 |
| 35 | 625.77 | 266.9 | 1.0 | 223.7 | 0.67 | -50.0 | 8 | 204.25 | 201.4 | 0.21 |
| 36 | 641.25 | 266.9 | 1.0 | 223.7 | 0.67 | -50.0 | 8 | 202.29 | 201.4 | 0.21 |
| 37 | 614.35 | 266.9 | 1.0 | 223.7 | 0.55 | -90.0 | 8 | 199.22 | 201.4 | 0.21 |
| 38 | 563.60 | 266.9 | 1.0 | 223.7 | 0.55 | -90.0 | 8 | 164.05 | 201.4 | 0.21 |
| 39 | 508.21 | 266.9 | 1.0 | 223.7 | 0.38 | -10.0 | 8 | 163.67 | 201.4 | 0.21 |
| 40 | 516.05 | 266.9 | 1.0 | 223.7 | 0.38 | -10.0 | 8 | 162.17 | 201.4 | 0.21 |
| 41 | 520.08 | 266.9 | 1.0 | 223.7 | 0.38 | -10.0 | 8 | 154.56 | 201.4 | 0.21 |
| 42 | 492.08 | 266.9 | 1.0 | 265.9 | 0.41 | -10.0 | 8 | 158.68 | 239.3 | 0.00 |
| 43 | 463.54 | 266.9 | 1.0 | 265.9 | 0.41 | -10.0 | 8 | 145.74 | 239.3 | 0.00 |
| 44 | 570.44 | 266.9 | 1.0 | 223.7 | 0.22 | -50.0 | 8 | 181.34 | 201.4 | 0.21 |
| 45 | 730.39 | 266.9 | 1.0 | 223.7 | 0.22 | -50.0 | 8 | 231.80 | 201.4 | 0.21 |
| 46 | 830.00 | 266.9 | 1.0 | 223.7 | 0.22 | -50.0 | 8 | 255.79 | 201.4 | 0.21 |
| 47 | 939.75 | 266.9 | 1.0 | 223.7 | 0.18 | -90.0 | 8 | 288.00 | 201.4 | 0.21 |
| 48 | 1018.45 | 266.9 | 1.0 | 223.7 | 0.18 | -90.0 | 8 | 295.69 | 201.4 | 0.21 |
| 49 | 988.52 | 266.9 | 1.0 | 223.7 | 0.18 | -90.0 | 8 | 262.08 | 201.4 | 0.21 |
| 50 | 180.19 | 241.7 | 1.0 | 111.9 | 0.17 | -90.0 | 18 | 60.46 | 100.7 | 0.36 |
| 51 | 196.19 | 241.6 | 1.0 | 111.9 | 0.17 | -90.0 | 18 | 66.39 | 100.7 | 0.36 |
| 52 | 214.63 | 241.6 | 1.0 | 111.9 | 0.17 | -90.0 | 18 | 73.59 | 100.7 | 0.36 |
| 53 | 236.72 | 241.6 | 1.0 | 111.9 | 0.17 | -90.0 | 18 | 82.31 | 100.7 | 0.36 |
| 54 | 263.54 | 241.6 | 1.0 | 111.9 | 0.17 | -90.0 | 18 | 93.07 | 100.7 | 0.36 |
| 55 | 294.01 | 241.6 | 1.0 | 111.9 | 0.17 | -90.0 | 18 | 105.51 | 100.7 | 0.36 |
| 56 | 317.79 | 240.5 | 1.0 | 223.7 | 0.22 | -50.0 | 12 | 283.59 | 201.4 | 0.00 |
| 57 | 360.43 | 240.5 | 1.0 | 223.7 | 0.22 | -50.0 | 12 | 311.81 | 201.4 | 0.00 |
| 58 | 440.39 | 240.5 | 1.0 | 223.7 | 0.38 | -10.0 | 12 | 247.44 | 201.4 | 0.00 |
| 59 | 518.87 | 240.5 | 1.0 | 223.7 | 0.38 | -10.0 | 12 | 236.53 | 201.4 | 0.00 |
| 60 | 592.63 | 240.5 | 1.0 | 223.7 | 0.38 | -10.0 | 12 | 197.45 | 201.4 | 0.00 |
| 61 | 655.95 | 240.5 | 1.0 | 223.7 | 0.38 | -10.0 | 8 | 175.69 | 201.4 | 0.21 |
| 62 | 698.98 | 243.2 | 1.0 | 223.7 | 0.38 | -10.0 | 8 | 203.50 | 201.4 | 0.21 |
| 63 | 733.09 | 246.8 | 1.0 | 223.7 | 0.38 | -10.0 | 8 | 223.75 | 201.4 | 0.21 |
| 64 | 762.10 | 253.6 | 1.0 | 223.7 | 0.38 | -10.0 | 8 | 224.76 | 201.4 | 0.21 |
| 65 | 748.76 | 253.7 | 1.0 | 223.7 | 0.38 | -10.0 | 8 | 224.44 | 201.4 | 0.21 |
| 66 | 639.60 | 253.6 | 1.0 | 223.7 | 0.55 | -90.0 | 8 | 176.07 | 201.4 | 0.21 |
| 67 | 698.99 | 246.8 | 1.0 | 223.7 | 0.55 | -90.0 | 8 | 224.37 | 201.4 | 0.21 |
| 68 | 679.54 | 245.4 | 1.0 | 223.7 | 0.67 | -50.0 | 8 | 214.18 | 201.4 | 0.21 |
| 69 | 641.87 | 245.4 | 1.0 | 223.7 | 0.67 | -50.0 | 8 | 217.00 | 201.4 | 0.21 |
| 70 | 671.22 | 246.8 | 1.0 | 223.7 | 0.92 | -90.0 | 8 | 197.62 | 201.4 | 0.21 |
| 71 | 699.38 | 257.3 | 1.0 | 223.7 | 0.67 | -50.0 | 8 | 233.85 | 201.4 | 0.21 |
| 72 | 705.41 | 257.3 | 1.0 | 223.7 | 0.55 | -90.0 | 8 | 234.42 | 201.4 | 0.21 |
| 73 | 689.07 | 257.3 | 1.0 | 223.7 | 0.55 | -90.0 | 8 | 209.00 | 201.4 | 0.21 |
| 74 | 751.58 | 266.9 | 1.0 | 223.7 | 0.38 | -10.0 | 1 | 218.32 | 201.4 | 0.21 |
| 75 | 810.43 | 266.9 | 1.0 | 223.7 | 0.38 | -10.0 | 8 | 237.57 | 201.4 | 0.21 |
| 76 | 781.27 | 266.9 | 1.0 | 223.7 | 0.38 | -10.0 | 8 | 231.23 | 201.4 | 0.21 |
| 77 | 689.64 | 266.9 | 1.0 | 223.7 | 0.38 | -10.0 | 8 | 197.31 | 201.4 | 0.21 |
| 78 | 594.60 | 266.9 | 1.0 | 223.7 | 0.38 | -10.0 | 8 | 167.41 | 201.4 | 0.21 |
| 79 | 658.14 | 266.9 | 1.0 | 223.7 | 0.22 | -50.0 | 8 | 200.50 | 201.4 | 0.21 |
| 80 | 815.89 | 266.9 | 1.0 | 223.7 | 0.22 | -50.0 | 8 | 253.91 | 201.4 | 0.21 |
| 81 | 919.24 | 266.9 | 1.0 | 223.7 | 0.22 | -50.0 | 8 | 279.84 | 201.4 | 0.21 |
| 82 | 940.75 | 266.9 | 1.0 | 223.7 | 0.18 | -90.0 | 8 | 272.02 | 201.4 | 0.21 |

| | | | | | | | | | | |
|-----|---------|-------|-----|-------|------|-------|----|--------|-------|------|
| 83 | 1024.99 | 266.9 | 1.0 | 223.7 | 0.18 | -90.0 | 8 | 280.77 | 201.4 | 0.21 |
| 84 | 987.76 | 266.9 | 1.0 | 223.7 | 0.18 | -90.0 | 12 | 256.71 | 201.4 | 0.00 |
| 85 | 877.34 | 266.9 | 1.0 | 223.7 | 0.18 | -90.0 | 12 | 310.04 | 201.4 | 0.00 |
| 86 | 835.20 | 257.3 | 1.0 | 223.7 | 0.18 | -90.0 | 8 | 263.54 | 201.4 | 0.21 |
| 87 | 830.38 | 257.3 | 1.0 | 265.9 | 0.19 | -90.0 | 8 | 271.79 | 239.3 | 0.00 |
| 88 | 256.99 | 240.5 | 1.0 | 223.7 | 0.22 | -50.0 | 12 | 222.50 | 201.4 | 0.00 |
| 89 | 279.98 | 240.5 | 1.0 | 223.7 | 0.22 | -50.0 | 12 | 245.70 | 201.4 | 0.00 |
| 90 | 299.18 | 240.5 | 1.0 | 223.7 | 0.22 | -50.0 | 12 | 265.29 | 201.4 | 0.00 |
| 91 | 323.60 | 240.5 | 1.0 | 223.7 | 0.22 | -50.0 | 12 | 288.04 | 201.4 | 0.00 |
| 92 | 346.18 | 240.5 | 1.0 | 223.7 | 0.22 | -50.0 | 12 | 307.17 | 201.4 | 0.00 |
| 93 | 419.69 | 240.5 | 1.0 | 223.7 | 0.22 | -50.0 | 12 | 356.52 | 201.4 | 0.00 |
| 94 | 426.17 | 240.5 | 1.0 | 223.7 | 0.22 | -50.0 | 12 | 329.52 | 201.4 | 0.00 |
| 95 | 492.72 | 240.5 | 1.0 | 223.7 | 0.38 | -10.0 | 12 | 213.76 | 201.4 | 0.00 |
| 96 | 558.67 | 240.5 | 1.0 | 265.9 | 0.41 | -10.0 | 12 | 160.50 | 239.3 | 0.00 |
| 97 | 609.08 | 240.5 | 1.0 | 265.9 | 0.41 | -10.0 | 8 | 178.15 | 239.3 | 0.00 |
| 98 | 643.53 | 243.8 | 1.0 | 223.7 | 0.38 | -10.0 | 8 | 178.46 | 201.4 | 0.21 |
| 99 | 675.58 | 246.8 | 1.0 | 223.7 | 0.38 | -10.0 | 8 | 195.75 | 201.4 | 0.21 |
| 100 | 701.72 | 253.6 | 1.0 | 223.7 | 0.38 | -10.0 | 8 | 193.26 | 201.4 | 0.21 |
| 101 | 725.45 | 257.3 | 1.0 | 223.7 | 0.38 | -10.0 | 8 | 201.44 | 201.4 | 0.21 |
| 102 | 770.44 | 257.3 | 1.0 | 223.7 | 0.38 | -10.0 | 8 | 237.04 | 201.4 | 0.21 |
| 103 | 790.09 | 266.9 | 1.0 | 223.7 | 0.38 | -10.0 | 8 | 216.55 | 201.4 | 0.21 |
| 104 | 767.56 | 266.9 | 1.0 | 223.7 | 0.38 | -10.0 | 8 | 219.02 | 201.4 | 0.21 |
| 105 | 680.16 | 266.9 | 1.0 | 223.7 | 0.38 | -10.0 | 8 | 191.07 | 201.4 | 0.21 |
| 106 | 598.32 | 266.9 | 1.0 | 223.7 | 0.22 | -50.0 | 1 | 188.05 | 201.4 | 0.21 |
| 107 | 791.64 | 266.9 | 1.0 | 223.7 | 0.22 | -50.0 | 8 | 237.29 | 201.4 | 0.21 |
| 108 | 921.15 | 266.9 | 1.0 | 223.7 | 0.22 | -50.0 | 8 | 277.51 | 201.4 | 0.21 |
| 109 | 960.58 | 266.9 | 1.0 | 223.7 | 0.22 | -50.0 | 8 | 277.32 | 201.4 | 0.21 |
| 110 | 998.25 | 266.9 | 1.0 | 223.7 | 0.18 | -90.0 | 1 | 276.00 | 201.4 | 0.21 |
| 111 | 986.36 | 266.9 | 1.0 | 223.7 | 0.18 | -90.0 | 12 | 276.24 | 201.4 | 0.00 |
| 112 | 885.05 | 266.9 | 1.0 | 223.7 | 0.18 | -90.0 | 12 | 331.38 | 201.4 | 0.00 |
| 113 | 882.63 | 257.3 | 1.0 | 223.7 | 0.18 | -90.0 | 8 | 280.17 | 201.4 | 0.21 |
| 114 | 864.77 | 257.3 | 1.0 | 223.7 | 0.18 | -90.0 | 8 | 258.47 | 201.4 | 0.21 |
| 115 | 459.55 | 240.5 | 1.0 | 223.7 | 0.18 | -90.0 | 12 | 370.12 | 201.4 | 0.00 |
| 116 | 442.74 | 240.5 | 1.0 | 223.7 | 0.18 | -90.0 | 12 | 371.71 | 201.4 | 0.00 |
| 117 | 413.00 | 240.5 | 1.0 | 223.7 | 0.18 | -90.0 | 12 | 357.21 | 201.4 | 0.00 |
| 118 | 397.25 | 240.5 | 1.0 | 223.7 | 0.22 | -50.0 | 12 | 326.54 | 201.4 | 0.00 |
| 119 | 414.10 | 240.5 | 1.0 | 223.7 | 0.22 | -50.0 | 12 | 348.96 | 201.4 | 0.00 |
| 120 | 447.28 | 240.5 | 1.0 | 223.7 | 0.22 | -50.0 | 12 | 377.40 | 201.4 | 0.00 |
| 121 | 496.32 | 240.5 | 1.0 | 223.7 | 0.22 | -50.0 | 12 | 403.03 | 201.4 | 0.00 |
| 122 | 533.10 | 240.5 | 1.0 | 223.7 | 0.22 | -50.0 | 12 | 368.75 | 201.4 | 0.00 |
| 123 | 565.74 | 240.5 | 1.0 | 223.7 | 0.22 | -50.0 | 12 | 258.21 | 201.4 | 0.00 |
| 124 | 570.45 | 240.5 | 1.0 | 223.7 | 0.22 | -50.0 | 1 | 212.31 | 201.4 | 0.21 |
| 125 | 540.17 | 240.7 | 1.0 | 265.9 | 0.41 | -10.0 | 8 | 155.30 | 239.3 | 0.00 |
| 126 | 576.19 | 243.8 | 1.0 | 265.9 | 0.41 | -10.0 | 8 | 170.50 | 239.3 | 0.00 |
| 127 | 605.42 | 246.8 | 1.0 | 265.9 | 0.41 | -10.0 | 8 | 184.48 | 239.3 | 0.00 |
| 128 | 611.88 | 253.6 | 1.0 | 223.7 | 0.38 | -10.0 | 8 | 158.29 | 201.4 | 0.21 |
| 129 | 694.96 | 257.3 | 1.0 | 223.7 | 0.22 | -50.0 | 1 | 243.29 | 201.4 | 0.21 |
| 130 | 684.45 | 257.3 | 1.0 | 223.7 | 0.22 | -50.0 | 1 | 231.16 | 201.4 | 0.21 |
| 131 | 633.05 | 266.9 | 1.0 | 223.7 | 0.38 | -10.0 | 12 | 167.14 | 201.4 | 0.00 |
| 132 | 669.49 | 266.9 | 1.0 | 223.7 | 0.38 | -10.0 | 8 | 178.08 | 201.4 | 0.21 |
| 133 | 674.23 | 266.9 | 1.0 | 223.7 | 0.22 | -50.0 | 1 | 216.80 | 201.4 | 0.21 |
| 134 | 816.56 | 266.9 | 1.0 | 223.7 | 0.22 | -50.0 | 8 | 242.44 | 201.4 | 0.21 |
| 135 | 936.96 | 266.9 | 1.0 | 223.7 | 0.22 | -50.0 | 8 | 279.43 | 201.4 | 0.21 |
| 136 | 958.37 | 266.9 | 1.0 | 223.7 | 0.22 | -50.0 | 8 | 277.44 | 201.4 | 0.21 |
| 137 | 999.64 | 266.9 | 1.0 | 223.7 | 0.18 | -90.0 | 1 | 275.96 | 201.4 | 0.21 |
| 138 | 982.85 | 266.9 | 1.0 | 223.7 | 0.18 | -90.0 | 12 | 279.47 | 201.4 | 0.00 |
| 139 | 878.45 | 266.9 | 1.0 | 223.7 | 0.18 | -90.0 | 12 | 335.43 | 201.4 | 0.00 |
| 140 | 887.80 | 257.3 | 1.0 | 223.7 | 0.18 | -90.0 | 8 | 280.92 | 201.4 | 0.21 |
| 141 | 872.01 | 257.3 | 1.0 | 265.9 | 0.19 | -90.0 | 8 | 280.23 | 239.3 | 0.00 |
| 142 | 605.29 | 240.5 | 1.0 | 223.7 | 0.18 | -90.0 | 12 | 198.88 | 201.4 | 0.00 |

| | | | | | | | | | | |
|-----|---------|-------|-----|-------|------|-------|----|--------|-------|------|
| 143 | 620.89 | 240.5 | 1.0 | 223.7 | 0.18 | -90.0 | 12 | 304.11 | 201.4 | 0.00 |
| 144 | 601.84 | 240.5 | 1.0 | 223.7 | 0.18 | -90.0 | 12 | 373.55 | 201.4 | 0.00 |
| 145 | 570.20 | 240.5 | 1.0 | 223.7 | 0.18 | -90.0 | 12 | 410.22 | 201.4 | 0.00 |
| 146 | 514.28 | 240.5 | 1.0 | 223.7 | 0.18 | -90.0 | 12 | 411.33 | 201.4 | 0.00 |
| 147 | 484.48 | 240.5 | 1.0 | 223.7 | 0.22 | -50.0 | 12 | 379.00 | 201.4 | 0.00 |
| 148 | 501.95 | 240.5 | 1.0 | 223.7 | 0.22 | -50.0 | 12 | 400.41 | 201.4 | 0.00 |
| 149 | 553.58 | 240.5 | 1.0 | 223.7 | 0.22 | -50.0 | 12 | 406.74 | 201.4 | 0.00 |
| 150 | 624.11 | 240.5 | 1.0 | 223.7 | 0.22 | -50.0 | 12 | 342.71 | 201.4 | 0.00 |
| 151 | 697.93 | 240.5 | 1.0 | 223.7 | 0.22 | -50.0 | 12 | 214.69 | 201.4 | 0.00 |
| 152 | 736.01 | 240.5 | 1.0 | 223.7 | 0.22 | -50.0 | 1 | 233.94 | 201.4 | 0.21 |
| 153 | 722.45 | 240.5 | 1.0 | 223.7 | 0.22 | -50.0 | 1 | 230.73 | 201.4 | 0.21 |
| 154 | 687.80 | 243.2 | 1.0 | 223.7 | 0.22 | -50.0 | 1 | 230.04 | 201.4 | 0.21 |
| 155 | 692.36 | 246.8 | 1.0 | 223.7 | 0.22 | -50.0 | 1 | 237.19 | 201.4 | 0.21 |
| 156 | 757.05 | 253.6 | 1.0 | 223.7 | 0.22 | -50.0 | 1 | 249.08 | 201.4 | 0.21 |
| 157 | 908.79 | 253.6 | 1.0 | 223.7 | 0.22 | -50.0 | 1 | 267.44 | 201.4 | 0.21 |
| 158 | 964.26 | 253.7 | 1.0 | 223.7 | 0.22 | -50.0 | 8 | 306.46 | 201.4 | 0.21 |
| 159 | 967.95 | 257.3 | 1.0 | 223.7 | 0.22 | -50.0 | 8 | 298.38 | 201.4 | 0.21 |
| 160 | 850.75 | 257.3 | 1.0 | 223.7 | 0.22 | -50.0 | 8 | 282.24 | 201.4 | 0.21 |
| 161 | 855.52 | 266.9 | 1.0 | 223.7 | 0.22 | -50.0 | 1 | 253.20 | 201.4 | 0.21 |
| 162 | 755.92 | 266.9 | 1.0 | 223.7 | 0.22 | -50.0 | 1 | 231.38 | 201.4 | 0.21 |
| 163 | 820.12 | 266.9 | 1.0 | 223.7 | 0.22 | -50.0 | 8 | 244.18 | 201.4 | 0.21 |
| 164 | 940.79 | 266.9 | 1.0 | 223.7 | 0.22 | -50.0 | 8 | 280.30 | 201.4 | 0.21 |
| 165 | 958.46 | 266.9 | 1.0 | 223.7 | 0.22 | -50.0 | 8 | 276.33 | 201.4 | 0.21 |
| 166 | 1000.17 | 266.9 | 1.0 | 223.7 | 0.18 | -90.0 | 1 | 274.35 | 201.4 | 0.21 |
| 167 | 972.04 | 266.9 | 1.0 | 223.7 | 0.18 | -90.0 | 12 | 290.89 | 201.4 | 0.00 |
| 168 | 867.77 | 266.9 | 1.0 | 223.7 | 0.18 | -90.0 | 12 | 340.47 | 201.4 | 0.00 |
| 169 | 890.16 | 257.3 | 1.0 | 223.7 | 0.18 | -90.0 | 8 | 280.49 | 201.4 | 0.21 |
| 170 | 877.11 | 257.3 | 1.0 | 265.9 | 0.19 | -90.0 | 8 | 278.24 | 239.3 | 0.00 |
| 171 | 837.96 | 257.3 | 1.0 | 265.9 | 0.19 | -90.0 | 8 | 244.00 | 239.3 | 0.00 |
| 172 | 640.07 | 243.2 | 1.0 | 223.7 | 0.18 | -90.0 | 12 | 204.73 | 201.4 | 0.00 |
| 173 | 663.06 | 240.5 | 1.0 | 223.7 | 0.18 | -90.0 | 12 | 211.95 | 201.4 | 0.00 |
| 174 | 627.65 | 240.5 | 1.0 | 223.7 | 0.18 | -90.0 | 12 | 321.69 | 201.4 | 0.00 |
| 175 | 600.69 | 240.5 | 1.0 | 223.7 | 0.18 | -90.0 | 12 | 377.12 | 201.4 | 0.00 |
| 176 | 549.78 | 240.5 | 1.0 | 223.7 | 0.18 | -90.0 | 12 | 402.35 | 201.4 | 0.00 |
| 177 | 513.41 | 240.5 | 1.0 | 223.7 | 0.22 | -50.0 | 12 | 383.75 | 201.4 | 0.00 |
| 178 | 529.42 | 240.5 | 1.0 | 223.7 | 0.22 | -50.0 | 12 | 402.42 | 201.4 | 0.00 |
| 179 | 606.85 | 240.5 | 1.0 | 223.7 | 0.22 | -50.0 | 12 | 366.65 | 201.4 | 0.00 |
| 180 | 657.07 | 240.5 | 1.0 | 223.7 | 0.22 | -50.0 | 12 | 273.16 | 201.4 | 0.00 |
| 181 | 721.92 | 240.5 | 1.0 | 223.7 | 0.22 | -50.0 | 1 | 205.63 | 201.4 | 0.21 |
| 182 | 771.15 | 240.7 | 1.0 | 223.7 | 0.22 | -50.0 | 8 | 235.70 | 201.4 | 0.21 |
| 183 | 804.85 | 241.8 | 1.0 | 223.7 | 0.22 | -50.0 | 8 | 258.72 | 201.4 | 0.21 |
| 184 | 832.45 | 243.8 | 1.0 | 223.7 | 0.22 | -50.0 | 8 | 272.59 | 201.4 | 0.21 |
| 185 | 887.01 | 246.8 | 1.0 | 223.7 | 0.22 | -50.0 | 8 | 291.46 | 201.4 | 0.21 |
| 186 | 884.95 | 253.6 | 1.0 | 223.7 | 0.22 | -50.0 | 1 | 239.20 | 201.4 | 0.21 |
| 187 | 1049.89 | 253.6 | 1.0 | 223.7 | 0.18 | -90.0 | 1 | 318.60 | 201.4 | 0.21 |
| 188 | 1058.44 | 254.8 | 1.0 | 223.7 | 0.18 | -90.0 | 8 | 340.79 | 201.4 | 0.21 |
| 189 | 984.03 | 257.3 | 1.0 | 223.7 | 0.18 | -90.0 | 8 | 314.55 | 201.4 | 0.21 |
| 190 | 913.10 | 257.3 | 1.0 | 223.7 | 0.22 | -50.0 | 8 | 300.84 | 201.4 | 0.21 |
| 191 | 946.97 | 266.9 | 1.0 | 223.7 | 0.22 | -50.0 | 12 | 243.04 | 201.4 | 0.00 |
| 192 | 960.73 | 266.9 | 1.0 | 223.7 | 0.22 | -50.0 | 8 | 257.52 | 201.4 | 0.21 |
| 193 | 973.58 | 266.9 | 1.0 | 223.7 | 0.18 | -90.0 | 12 | 284.15 | 201.4 | 0.00 |
| 194 | 898.61 | 266.9 | 1.0 | 223.7 | 0.18 | -90.0 | 12 | 357.11 | 201.4 | 0.00 |
| 195 | 957.40 | 257.3 | 1.0 | 223.7 | 0.18 | -90.0 | 8 | 305.97 | 201.4 | 0.21 |
| 196 | 931.12 | 257.3 | 1.0 | 223.7 | 0.18 | -90.0 | 8 | 274.94 | 201.4 | 0.21 |
| 197 | 876.72 | 257.3 | 1.0 | 265.9 | 0.19 | -90.0 | 8 | 259.23 | 239.3 | 0.00 |
| 198 | 659.56 | 245.4 | 1.0 | 223.7 | 0.18 | -90.0 | 8 | 177.67 | 201.4 | 0.21 |
| 199 | 677.01 | 243.8 | 1.0 | 223.7 | 0.18 | -90.0 | 8 | 192.35 | 201.4 | 0.21 |
| 200 | 656.47 | 240.7 | 1.0 | 223.7 | 0.18 | -90.0 | 8 | 208.35 | 201.4 | 0.21 |
| 201 | 716.73 | 240.5 | 1.0 | 223.7 | 0.18 | -90.0 | 1 | 206.74 | 201.4 | 0.21 |
| 202 | 647.43 | 240.5 | 1.0 | 223.7 | 0.18 | -90.0 | 12 | 209.59 | 201.4 | 0.00 |

| | | | | | | | | | | |
|-----|---------|-------|-----|-------|------|-------|----|--------|-------|------|
| 203 | 635.77 | 240.5 | 1.0 | 223.7 | 0.18 | -90.0 | 12 | 246.83 | 201.4 | 0.00 |
| 204 | 687.90 | 240.5 | 1.0 | 223.7 | 0.22 | -50.0 | 8 | 187.01 | 201.4 | 0.21 |
| 205 | 726.53 | 241.7 | 1.0 | 223.7 | 0.22 | -50.0 | 8 | 209.37 | 201.4 | 0.21 |
| 206 | 771.74 | 243.2 | 1.0 | 223.7 | 0.22 | -50.0 | 8 | 227.77 | 201.4 | 0.21 |
| 207 | 817.79 | 245.4 | 1.0 | 223.7 | 0.22 | -50.0 | 8 | 242.12 | 201.4 | 0.21 |
| 208 | 868.32 | 246.8 | 1.0 | 223.7 | 0.22 | -50.0 | 8 | 272.02 | 201.4 | 0.21 |
| 209 | 984.46 | 246.8 | 1.0 | 223.7 | 0.18 | -90.0 | 8 | 348.18 | 201.4 | 0.21 |
| 210 | 1013.56 | 253.6 | 1.0 | 223.7 | 0.18 | -90.0 | 1 | 296.97 | 201.4 | 0.21 |
| 211 | 1077.84 | 253.6 | 1.0 | 223.7 | 0.18 | -90.0 | 8 | 336.34 | 201.4 | 0.21 |
| 212 | 1089.50 | 254.8 | 1.0 | 223.7 | 0.18 | -90.0 | 8 | 358.00 | 201.4 | 0.21 |
| 213 | 1026.95 | 257.3 | 1.0 | 223.7 | 0.18 | -90.0 | 8 | 334.78 | 201.4 | 0.21 |
| 214 | 885.02 | 266.9 | 1.0 | 223.7 | 0.18 | -90.0 | 12 | 350.26 | 201.4 | 0.00 |
| 215 | 938.99 | 266.9 | 1.0 | 223.7 | 0.18 | -90.0 | 12 | 325.90 | 201.4 | 0.00 |
| 216 | 909.65 | 257.3 | 1.0 | 223.7 | 0.18 | -90.0 | 8 | 305.43 | 201.4 | 0.21 |
| 217 | 983.86 | 257.3 | 1.0 | 223.7 | 0.18 | -90.0 | 8 | 313.19 | 201.4 | 0.21 |
| 218 | 953.54 | 257.3 | 1.0 | 223.7 | 0.18 | -90.0 | 8 | 275.39 | 201.4 | 0.21 |
| 219 | 902.10 | 254.8 | 1.0 | 223.7 | 0.18 | -90.0 | 8 | 271.32 | 201.4 | 0.21 |
| 220 | 710.18 | 246.8 | 1.0 | 265.9 | 0.19 | -90.0 | 8 | 213.63 | 239.3 | 0.00 |
| 221 | 726.59 | 245.4 | 1.0 | 265.9 | 0.19 | -90.0 | 8 | 225.46 | 239.3 | 0.00 |
| 222 | 728.95 | 243.8 | 1.0 | 223.7 | 0.18 | -90.0 | 8 | 216.19 | 201.4 | 0.21 |
| 223 | 710.91 | 243.8 | 1.0 | 223.7 | 0.18 | -90.0 | 1 | 204.48 | 201.4 | 0.21 |
| 224 | 771.41 | 241.6 | 1.0 | 223.7 | 0.18 | -90.0 | 8 | 231.25 | 201.4 | 0.21 |
| 225 | 830.40 | 243.2 | 1.0 | 223.7 | 0.18 | -90.0 | 8 | 250.58 | 201.4 | 0.21 |
| 226 | 901.98 | 243.3 | 1.0 | 223.7 | 0.18 | -90.0 | 8 | 300.78 | 201.4 | 0.21 |
| 227 | 825.60 | 245.4 | 1.0 | 223.7 | 0.18 | -90.0 | 8 | 260.68 | 201.4 | 0.21 |
| 228 | 935.81 | 246.8 | 1.0 | 223.7 | 0.18 | -90.0 | 8 | 307.40 | 201.4 | 0.21 |
| 229 | 1006.41 | 246.8 | 1.0 | 223.7 | 0.18 | -90.0 | 8 | 351.03 | 201.4 | 0.21 |
| 230 | 982.25 | 253.6 | 1.0 | 265.9 | 0.19 | -90.0 | 1 | 294.61 | 239.3 | 0.00 |
| 231 | 1032.53 | 253.6 | 1.0 | 265.9 | 0.19 | -90.0 | 8 | 325.73 | 239.3 | 0.00 |
| 232 | 1039.09 | 254.8 | 1.0 | 223.7 | 0.18 | -90.0 | 8 | 317.32 | 201.4 | 0.21 |
| 233 | 1055.90 | 257.3 | 1.0 | 223.7 | 0.18 | -90.0 | 8 | 322.14 | 201.4 | 0.21 |
| 234 | 1033.04 | 257.3 | 1.0 | 223.7 | 0.18 | -90.0 | 8 | 333.13 | 201.4 | 0.21 |
| 235 | 1002.27 | 257.3 | 1.0 | 223.7 | 0.18 | -90.0 | 8 | 301.44 | 201.4 | 0.21 |
| 236 | 970.13 | 254.8 | 1.0 | 265.9 | 0.19 | -90.0 | 8 | 318.11 | 239.3 | 0.00 |
| 237 | 933.80 | 253.7 | 1.0 | 265.9 | 0.19 | -90.0 | 8 | 301.13 | 239.3 | 0.00 |
| 238 | 861.40 | 253.6 | 1.0 | 265.9 | 0.19 | -90.0 | 8 | 259.99 | 239.3 | 0.00 |
| 239 | 629.81 | 246.8 | 1.0 | 265.9 | 0.19 | -90.0 | 8 | 195.73 | 239.3 | 0.00 |
| 240 | 673.31 | 246.8 | 1.0 | 265.9 | 0.19 | -90.0 | 8 | 206.99 | 239.3 | 0.00 |
| 241 | 706.34 | 246.8 | 1.0 | 265.9 | 0.19 | -90.0 | 8 | 219.00 | 239.3 | 0.00 |
| 242 | 732.46 | 246.8 | 1.0 | 265.9 | 0.19 | -90.0 | 8 | 227.50 | 239.3 | 0.00 |
| 243 | 759.82 | 245.4 | 1.0 | 265.9 | 0.19 | -90.0 | 8 | 239.82 | 239.3 | 0.00 |
| 244 | 739.44 | 243.8 | 1.0 | 223.7 | 0.18 | -90.0 | 8 | 233.28 | 201.4 | 0.21 |
| 245 | 767.23 | 245.4 | 1.0 | 223.7 | 0.18 | -90.0 | 1 | 219.73 | 201.4 | 0.21 |
| 246 | 855.57 | 245.4 | 1.0 | 223.7 | 0.18 | -90.0 | 8 | 252.43 | 201.4 | 0.21 |
| 247 | 928.25 | 245.4 | 1.0 | 223.7 | 0.18 | -90.0 | 8 | 294.74 | 201.4 | 0.21 |
| 248 | 926.75 | 246.8 | 1.0 | 223.7 | 0.18 | -90.0 | 8 | 297.72 | 201.4 | 0.21 |
| 249 | 972.70 | 246.8 | 1.0 | 223.7 | 0.18 | -90.0 | 8 | 329.93 | 201.4 | 0.21 |
| 250 | 946.82 | 253.6 | 1.0 | 265.9 | 0.19 | -90.0 | 1 | 278.51 | 239.3 | 0.00 |
| 251 | 988.25 | 253.6 | 1.0 | 265.9 | 0.19 | -90.0 | 8 | 296.81 | 239.3 | 0.00 |
| 252 | 1020.23 | 253.7 | 1.0 | 265.9 | 0.19 | -90.0 | 8 | 338.46 | 239.3 | 0.00 |
| 253 | 1029.99 | 254.8 | 1.0 | 223.7 | 0.18 | -90.0 | 8 | 331.45 | 201.4 | 0.21 |
| 254 | 1040.59 | 257.3 | 1.0 | 223.7 | 0.18 | -90.0 | 8 | 330.40 | 201.4 | 0.21 |
| 255 | 993.59 | 257.3 | 1.0 | 223.7 | 0.18 | -90.0 | 8 | 286.96 | 201.4 | 0.21 |
| 256 | 954.44 | 254.8 | 1.0 | 223.7 | 0.18 | -90.0 | 8 | 285.26 | 201.4 | 0.21 |
| 257 | 910.54 | 253.7 | 1.0 | 265.9 | 0.19 | -90.0 | 8 | 291.10 | 239.3 | 0.00 |
| 258 | 836.76 | 253.7 | 1.0 | 265.9 | 0.19 | -90.0 | 8 | 251.08 | 239.3 | 0.00 |
| 259 | 789.36 | 253.6 | 1.0 | 265.9 | 0.19 | -90.0 | 8 | 226.60 | 239.3 | 0.00 |
| 260 | 743.13 | 246.8 | 1.0 | 265.9 | 0.19 | -90.0 | 8 | 234.20 | 239.3 | 0.00 |
| 261 | 763.02 | 246.8 | 1.0 | 223.7 | 0.18 | -90.0 | 8 | 212.78 | 201.4 | 0.21 |
| 262 | 839.26 | 245.4 | 1.0 | 265.9 | 0.19 | -90.0 | 8 | 274.56 | 239.3 | 0.00 |

| | | | | | | | | | | |
|-----|--------|-------|-----|-------|------|-------|----|--------|-------|------|
| 263 | 932.44 | 245.4 | 1.0 | 265.9 | 0.19 | -90.0 | 8 | 322.76 | 239.3 | 0.00 |
| 264 | 954.53 | 246.8 | 1.0 | 265.9 | 0.19 | -90.0 | 8 | 340.48 | 239.3 | 0.00 |
| 265 | 935.48 | 253.6 | 1.0 | 265.9 | 0.19 | -90.0 | 1 | 269.75 | 239.3 | 0.00 |
| 266 | 978.63 | 253.6 | 1.0 | 265.9 | 0.19 | -90.0 | 8 | 309.88 | 239.3 | 0.00 |
| 267 | 943.82 | 253.7 | 1.0 | 265.9 | 0.19 | -90.0 | 8 | 302.69 | 239.3 | 0.00 |
| 268 | 853.70 | 253.6 | 1.0 | 223.7 | 0.18 | -90.0 | 8 | 228.15 | 201.4 | 0.21 |
| 269 | 787.26 | 253.6 | 1.0 | 265.9 | 0.19 | -90.0 | 8 | 211.13 | 239.3 | 0.00 |
| 270 | 685.04 | 246.8 | 1.0 | 265.9 | 0.19 | -90.0 | 8 | 215.69 | 239.3 | 0.00 |
| 271 | 733.76 | 246.8 | 1.0 | 265.9 | 0.19 | -90.0 | 8 | 235.57 | 239.3 | 0.00 |
| 272 | 785.73 | 246.8 | 1.0 | 265.9 | 0.19 | -90.0 | 8 | 252.03 | 239.3 | 0.00 |
| 273 | 867.53 | 246.8 | 1.0 | 265.9 | 0.19 | -90.0 | 8 | 280.08 | 239.3 | 0.00 |
| 274 | 896.09 | 246.8 | 1.0 | 265.9 | 0.19 | -90.0 | 8 | 311.70 | 239.3 | 0.00 |
| 275 | 872.66 | 253.6 | 1.0 | 265.9 | 0.19 | -90.0 | 1 | 242.96 | 239.3 | 0.00 |
| 276 | 854.51 | 253.6 | 1.0 | 265.9 | 0.19 | -90.0 | 8 | 238.11 | 239.3 | 0.00 |
| 277 | 797.78 | 253.6 | 1.0 | 265.9 | 0.19 | -90.0 | 8 | 213.76 | 239.3 | 0.00 |
| 278 | 756.55 | 253.6 | 1.0 | 223.7 | 0.18 | -90.0 | 12 | 244.29 | 201.4 | 0.00 |
| 279 | 754.78 | 246.8 | 1.0 | 223.7 | 0.18 | -90.0 | 8 | 221.47 | 201.4 | 0.21 |
| 280 | 720.94 | 246.8 | 1.0 | 265.9 | 0.19 | -90.0 | 8 | 229.34 | 239.3 | 0.00 |
| 281 | 773.15 | 246.8 | 1.0 | 265.9 | 0.19 | -90.0 | 8 | 250.95 | 239.3 | 0.00 |
| 282 | 837.57 | 246.8 | 1.0 | 265.9 | 0.19 | -90.0 | 8 | 279.35 | 239.3 | 0.00 |
| 283 | 847.89 | 246.8 | 1.0 | 265.9 | 0.19 | -90.0 | 8 | 294.37 | 239.3 | 0.00 |
| 284 | 836.48 | 253.6 | 1.0 | 265.9 | 0.19 | -90.0 | 1 | 227.41 | 239.3 | 0.00 |
| 285 | 782.42 | 253.6 | 1.0 | 265.9 | 0.19 | -90.0 | 12 | 228.73 | 239.3 | 0.00 |
| 286 | 756.32 | 246.8 | 1.0 | 265.9 | 0.19 | -90.0 | 8 | 244.85 | 239.3 | 0.00 |
| 287 | 806.52 | 246.8 | 1.0 | 265.9 | 0.19 | -90.0 | 8 | 269.46 | 239.3 | 0.00 |
| 288 | 812.57 | 246.8 | 1.0 | 265.9 | 0.19 | -90.0 | 8 | 279.79 | 239.3 | 0.00 |

TABLE 11
CTSCREEN
SUMMARY OF CONCENTRATIONS
HILL # 4/5

TABLE 11
CTSCREEN
SUMMARY OF CONCENTRATIONS
HILL # 4/5

HILLS # 4 & 5

CTSCREEN: URC AND PENELEC HILL 4&5 UNSTABLE AND STABLE

SUMMARY FOR ALL STABLE HOURS

| REC # | CONC UG/M**3 | WD DEG | WS M/S | SIGV M/S | SIGW M/S | DTHDZ K/M | HCRIT M | <--- PEAK SOURCE ---> | | |
|----------|-----------------|-----------|-----------|-------------|-------------|--------------|------------|-----------------------|--------|-------|
| | | | | | | | | NS | SRC | CTRIB |
| 122 | 828.50 | 170.8 | 3.0 | 0.30 | 0.15 | 0.035 | 108.0 | 12 | 326.44 | 120.9 |

SUMMARY FOR ALL UNSTABLE HOURS

| REC # | CONC UG/M**3 | WD DEG | WS M/S | ZI M | W* M/S | L M | <----- PEAK SOURCE -----> | | | |
|----------|-----------------|-----------|-----------|---------|-----------|--------|---------------------------|--------|-------|------|
| | | | | | | | NS | SRC | CTRIB | HPL |
| 123 | 840.31 | 174.9 | 1.0 | 196.0 | 0.18 | -90.0 | 12 | 404.01 | 176.4 | 0.16 |

SUMMARY FOR ALL HOURS

| REC # | CONC UG/M**3 | 3HR UG/M**3 | 24HR | | ANNUAL UG/M**3 |
|----------|-----------------|----------------|---------|---------|-------------------|
| | | | UG/M**3 | UG/M**3 | |
| 123 | 840.31 | 588.21 | 126.05 | | 25.21 |

RECEPTOR SUMMARY FOR STABLE HOURS

| REC # | CONC UG/M**3 | WD DEG | WS M/S | SIGV M/S | SIGW M/S | DTHDZ K/M | HCRIT M | <--- PEAK SOURCE ---> | | |
|----------|-----------------|-----------|-----------|-------------|-------------|--------------|------------|-----------------------|-------|-------|
| | | | | | | | | NS | SRC | CTRIB |
| 1 | 93.71 | 169.5 | 2.0 | 0.75 | 0.75 | 0.035 | 137.3 | 12 | 32.98 | 131.4 |
| 2 | 93.46 | 169.5 | 2.0 | 0.75 | 0.75 | 0.035 | 137.3 | 12 | 32.14 | 131.4 |
| 3 | 93.19 | 170.7 | 2.0 | 0.75 | 0.75 | 0.035 | 137.3 | 12 | 32.12 | 131.4 |
| 4 | 92.77 | 170.8 | 2.0 | 0.75 | 0.75 | 0.035 | 137.3 | 12 | 31.41 | 131.4 |
| 5 | 92.53 | 171.7 | 2.0 | 0.75 | 0.75 | 0.035 | 137.3 | 12 | 31.54 | 131.4 |
| 6 | 92.22 | 171.7 | 2.0 | 0.75 | 0.75 | 0.035 | 137.3 | 12 | 30.91 | 131.4 |
| 7 | 91.86 | 172.6 | 2.0 | 0.75 | 0.75 | 0.035 | 137.3 | 12 | 30.79 | 131.4 |
| 8 | 91.38 | 172.6 | 2.0 | 0.75 | 0.75 | 0.035 | 137.3 | 12 | 29.90 | 131.4 |
| 9 | 90.83* | 172.6 | 2.0 | 0.75 | 0.75 | 0.035 | 137.3 | 12 | 29.01 | 131.4 |
| 10 | 90.27 | 172.6 | 2.0 | 0.75 | 0.75 | 0.035 | 137.3 | 12 | 28.22 | 131.4 |
| 11 | 89.97 | 177.1 | 2.0 | 0.75 | 0.75 | 0.035 | 137.3 | 12 | 30.85 | 131.4 |
| 12 | 90.23 | 177.1 | 2.0 | 0.75 | 0.75 | 0.035 | 137.3 | 12 | 30.59 | 131.4 |
| 13 | 90.44 | 177.1 | 2.0 | 0.75 | 0.75 | 0.035 | 137.3 | 12 | 30.36 | 131.4 |
| 14 | 90.57 | 177.1 | 2.0 | 0.75 | 0.75 | 0.035 | 137.3 | 12 | 30.15 | 131.4 |
| 15 | 95.00 | 169.5 | 2.0 | 0.75 | 0.75 | 0.035 | 137.3 | 12 | 33.99 | 131.4 |
| 16 | 95.01 | 169.5 | 2.0 | 0.75 | 0.75 | 0.035 | 137.3 | 12 | 33.17 | 131.4 |
| 17 | 94.90 | 170.7 | 2.0 | 0.75 | 0.75 | 0.035 | 137.3 | 12 | 33.06 | 131.4 |
| 18 | 94.42 | 171.7 | 2.0 | 0.75 | 0.75 | 0.035 | 137.3 | 12 | 32.68 | 131.4 |
| 19 | 93.87 | 172.4 | 2.0 | 0.75 | 0.75 | 0.035 | 137.3 | 12 | 32.09 | 131.4 |

| | | | | | | | | | | |
|----|--------|-------|-----|------|------|-------|-------|----|--------|-------|
| 20 | 93.37 | 172.6 | 2.0 | 0.75 | 0.75 | 0.035 | 137.3 | 12 | 31.18 | 131.4 |
| 21 | 92.67 | 172.6 | 2.0 | 0.75 | 0.75 | 0.035 | 137.3 | 12 | 30.04 | 131.4 |
| 22 | 91.91 | 172.6 | 2.0 | 0.75 | 0.75 | 0.035 | 137.3 | 12 | 28.98 | 131.4 |
| 23 | 91.67 | 177.1 | 2.0 | 0.75 | 0.75 | 0.035 | 137.3 | 12 | 31.54 | 131.4 |
| 24 | 91.99 | 177.1 | 2.0 | 0.75 | 0.75 | 0.035 | 137.3 | 12 | 31.20 | 131.4 |
| 25 | 92.21 | 177.1 | 2.0 | 0.75 | 0.75 | 0.035 | 137.3 | 12 | 30.91 | 131.4 |
| 26 | 92.37 | 177.1 | 2.0 | 0.75 | 0.75 | 0.035 | 137.3 | 12 | 30.69 | 131.4 |
| 27 | 92.47 | 177.1 | 2.0 | 0.75 | 0.75 | 0.035 | 137.3 | 12 | 30.49 | 131.4 |
| 28 | 92.50 | 177.1 | 2.0 | 0.75 | 0.75 | 0.035 | 137.3 | 12 | 30.53 | 131.4 |
| 29 | 82.03 | 181.5 | 1.0 | 0.75 | 0.75 | 0.035 | 166.7 | 12 | 26.57 | 153.0 |
| 30 | 91.24 | 180.0 | 2.0 | 0.75 | 0.75 | 0.035 | 137.3 | 12 | 31.30 | 131.4 |
| 31 | 92.48 | 177.1 | 2.0 | 0.75 | 0.75 | 0.035 | 137.3 | 12 | 29.94 | 131.4 |
| 32 | 92.46 | 177.7 | 2.0 | 0.75 | 0.75 | 0.035 | 137.3 | 12 | 30.01 | 131.4 |
| 33 | 92.39 | 177.7 | 2.0 | 0.75 | 0.75 | 0.035 | 137.3 | 12 | 29.74 | 131.4 |
| 34 | 92.25 | 177.7 | 2.0 | 0.75 | 0.75 | 0.035 | 137.3 | 12 | 29.39 | 131.4 |
| 35 | 92.31 | 177.7 | 2.0 | 0.75 | 0.75 | 0.035 | 137.3 | 12 | 29.48 | 131.4 |
| 36 | 91.09 | 181.5 | 2.0 | 0.75 | 0.75 | 0.035 | 137.3 | 12 | 31.23 | 131.4 |
| 37 | 81.80 | 183.5 | 2.0 | 0.75 | 0.75 | 0.020 | 118.6 | 12 | 28.57 | 148.4 |
| 38 | 80.44 | 190.3 | 1.0 | 0.75 | 0.75 | 0.035 | 166.7 | 12 | 26.60 | 153.0 |
| 39 | 80.23 | 190.3 | 1.0 | 0.75 | 0.75 | 0.035 | 166.7 | 12 | 26.57 | 153.0 |
| 40 | 72.74 | 206.2 | 1.0 | 0.75 | 0.75 | 0.035 | 166.7 | 12 | 24.49 | 153.0 |
| 41 | 98.60 | 168.2 | 2.0 | 0.75 | 0.75 | 0.035 | 137.3 | 12 | 35.15 | 131.4 |
| 42 | 99.59 | 169.5 | 2.0 | 0.75 | 0.75 | 0.035 | 137.3 | 12 | 35.57 | 131.4 |
| 43 | 100.00 | 170.7 | 2.0 | 0.75 | 0.75 | 0.035 | 137.3 | 12 | 35.33 | 131.4 |
| 44 | 106.80 | 166.2 | 3.0 | 0.75 | 0.75 | 0.010 | 32.2 | 12 | 37.40 | 158.4 |
| 45 | 112.55 | 166.2 | 3.0 | 0.75 | 0.75 | 0.010 | 32.2 | 12 | 39.19 | 158.4 |
| 46 | 119.65 | 166.2 | 3.0 | 0.75 | 0.75 | 0.010 | 32.2 | 12 | 38.12 | 158.4 |
| 47 | 111.90 | 166.2 | 3.0 | 0.75 | 0.75 | 0.010 | 32.2 | 12 | 27.13 | 158.4 |
| 48 | 106.96 | 174.9 | 3.0 | 0.75 | 0.75 | 0.010 | 32.2 | 12 | 33.83 | 158.4 |
| 49 | 100.11 | 166.5 | 5.0 | 0.30 | 0.15 | 0.035 | 49.3 | 5 | 48.41 | 29.9 |
| 50 | 102.60 | 166.5 | 5.0 | 0.30 | 0.15 | 0.035 | 49.3 | 5 | 49.64 | 29.9 |
| 51 | 103.39 | 166.5 | 5.0 | 0.30 | 0.15 | 0.035 | 49.3 | 5 | 50.02 | 29.9 |
| 52 | 103.40 | 166.5 | 5.0 | 0.30 | 0.15 | 0.035 | 49.3 | 5 | 50.03 | 29.9 |
| 53 | 101.08 | 166.5 | 5.0 | 0.30 | 0.15 | 0.035 | 49.3 | 5 | 49.00 | 29.9 |
| 54 | 101.00 | 184.5 | 3.0 | 0.75 | 0.75 | 0.010 | 32.2 | 12 | 28.87 | 158.4 |
| 55 | 95.38 | 177.1 | 2.0 | 0.75 | 0.75 | 0.035 | 137.3 | 12 | 32.17 | 131.4 |
| 56 | 100.67 | 190.3 | 3.0 | 0.75 | 0.75 | 0.010 | 32.2 | 12 | 31.62 | 158.4 |
| 57 | 97.09 | 177.7 | 2.0 | 0.75 | 0.75 | 0.035 | 137.3 | 12 | 31.68 | 131.4 |
| 58 | 96.49 | 180.0 | 2.0 | 0.75 | 0.75 | 0.035 | 137.3 | 12 | 32.22 | 131.4 |
| 59 | 95.83 | 180.0 | 2.0 | 0.75 | 0.75 | 0.035 | 137.3 | 12 | 31.64 | 131.4 |
| 60 | 94.78 | 181.5 | 2.0 | 0.75 | 0.75 | 0.035 | 137.3 | 12 | 31.60 | 131.4 |
| 61 | 272.31 | 165.2 | 5.0 | 0.30 | 0.30 | 0.035 | 49.3 | 12 | 105.37 | 109.6 |
| 62 | 262.91 | 165.2 | 5.0 | 0.30 | 0.30 | 0.035 | 49.3 | 12 | 132.20 | 109.6 |
| 63 | 256.99 | 165.2 | 5.0 | 0.30 | 0.30 | 0.035 | 49.3 | 12 | 123.15 | 109.6 |
| 64 | 231.54 | 166.5 | 5.0 | 0.30 | 0.30 | 0.035 | 49.3 | 12 | 69.58 | 109.6 |
| 65 | 234.66 | 166.5 | 5.0 | 0.30 | 0.30 | 0.035 | 49.3 | 12 | 130.15 | 109.6 |
| 66 | 185.18 | 166.5 | 5.0 | 0.30 | 0.30 | 0.035 | 49.3 | 12 | 54.75 | 109.6 |
| 67 | 211.42 | 166.5 | 5.0 | 0.30 | 0.30 | 0.035 | 49.3 | 18 | 54.33 | 71.6 |
| 68 | 168.82 | 167.8 | 5.0 | 0.30 | 0.30 | 0.035 | 49.3 | 18 | 70.99 | 71.6 |
| 69 | 188.23 | 167.8 | 5.0 | 0.30 | 0.30 | 0.035 | 49.3 | 18 | 84.00 | 71.6 |
| 70 | 164.09 | 174.9 | 5.0 | 0.30 | 0.30 | 0.035 | 49.3 | 18 | 63.55 | 71.6 |
| 71 | 185.48 | 179.4 | 5.0 | 0.30 | 0.30 | 0.035 | 49.3 | 18 | 52.29 | 71.6 |
| 72 | 187.02 | 179.4 | 5.0 | 0.30 | 0.30 | 0.035 | 49.3 | 7 | 51.48 | 102.6 |
| 73 | 177.94 | 180.1 | 5.0 | 0.30 | 0.30 | 0.035 | 49.3 | 7 | 53.98 | 102.6 |
| 74 | 178.36 | 183.6 | 5.0 | 0.30 | 0.30 | 0.035 | 49.3 | 8 | 48.78 | 124.0 |
| 75 | 187.39 | 183.6 | 5.0 | 0.30 | 0.30 | 0.035 | 49.3 | 7 | 54.33 | 102.6 |
| 76 | 183.94 | 190.3 | 5.0 | 0.30 | 0.30 | 0.035 | 49.3 | 18 | 58.92 | 71.6 |
| 77 | 123.54 | 177.2 | 1.0 | 0.30 | 0.30 | 0.035 | 166.7 | 12 | 32.06 | 153.0 |
| 78 | 123.28 | 177.2 | 1.0 | 0.30 | 0.30 | 0.035 | 166.7 | 12 | 31.88 | 153.0 |
| 79 | 129.16 | 211.2 | 5.0 | 0.30 | 0.30 | 0.035 | 49.3 | 8 | 46.33 | 124.0 |

| | | | | | | | | | | |
|-----|--------|-------|-----|------|------|-------|-------|----|--------|-------|
| 80 | 236.16 | 166.5 | 5.0 | 0.30 | 0.30 | 0.035 | 49.3 | 12 | 82.80 | 109.6 |
| 81 | 233.36 | 165.2 | 5.0 | 0.30 | 0.30 | 0.035 | 49.3 | 12 | 93.48 | 109.6 |
| 82 | 213.10 | 167.8 | 5.0 | 0.30 | 0.30 | 0.035 | 49.3 | 12 | 119.09 | 109.6 |
| 83 | 190.38 | 167.8 | 5.0 | 0.30 | 0.30 | 0.035 | 49.3 | 8 | 53.13 | 124.0 |
| 84 | 193.64 | 167.8 | 5.0 | 0.30 | 0.30 | 0.035 | 49.3 | 12 | 105.16 | 109.6 |
| 85 | 187.56 | 177.1 | 2.0 | 0.30 | 0.30 | 0.035 | 137.3 | 12 | 76.26 | 131.4 |
| 86 | 187.25 | 177.1 | 2.0 | 0.30 | 0.30 | 0.035 | 137.3 | 12 | 70.86 | 131.4 |
| 87 | 185.96 | 177.7 | 2.0 | 0.30 | 0.30 | 0.035 | 137.3 | 12 | 70.40 | 131.4 |
| 88 | 183.65 | 180.0 | 2.0 | 0.30 | 0.30 | 0.035 | 137.3 | 12 | 81.04 | 131.4 |
| 89 | 184.53 | 180.0 | 2.0 | 0.30 | 0.30 | 0.035 | 137.3 | 12 | 76.01 | 131.4 |
| 90 | 193.79 | 180.0 | 2.0 | 0.30 | 0.30 | 0.035 | 137.3 | 12 | 71.29 | 131.4 |
| 91 | 193.76 | 180.0 | 2.0 | 0.30 | 0.30 | 0.035 | 137.3 | 12 | 74.45 | 131.4 |
| 92 | 184.40 | 180.0 | 2.0 | 0.30 | 0.30 | 0.035 | 137.3 | 12 | 78.05 | 131.4 |
| 93 | 189.67 | 180.0 | 2.0 | 0.30 | 0.30 | 0.035 | 137.3 | 12 | 79.84 | 131.4 |
| 94 | 190.74 | 177.7 | 2.0 | 0.30 | 0.30 | 0.035 | 137.3 | 12 | 60.25 | 131.4 |
| 95 | 192.41 | 180.0 | 2.0 | 0.30 | 0.30 | 0.035 | 137.3 | 12 | 75.60 | 131.4 |
| 96 | 192.65 | 180.0 | 2.0 | 0.30 | 0.30 | 0.035 | 137.3 | 12 | 74.94 | 131.4 |
| 97 | 193.04 | 180.0 | 2.0 | 0.30 | 0.30 | 0.035 | 137.3 | 12 | 73.91 | 131.4 |
| 98 | 479.37 | 168.8 | 4.0 | 0.30 | 0.15 | 0.035 | 78.7 | 12 | 236.75 | 114.3 |
| 99 | 476.04 | 166.5 | 4.0 | 0.30 | 0.15 | 0.035 | 78.7 | 12 | 205.56 | 114.3 |
| 100 | 441.57 | 173.2 | 4.0 | 0.30 | 0.15 | 0.035 | 78.7 | 12 | 243.39 | 114.3 |
| 101 | 390.81 | 177.1 | 3.0 | 0.30 | 0.08 | 0.035 | 108.0 | 12 | 253.21 | 120.9 |
| 102 | 401.79 | 177.1 | 3.0 | 0.30 | 0.15 | 0.035 | 108.0 | 12 | 248.67 | 120.9 |
| 103 | 397.33 | 177.1 | 3.0 | 0.30 | 0.30 | 0.035 | 108.0 | 12 | 215.02 | 120.9 |
| 104 | 397.22 | 180.0 | 3.0 | 0.30 | 0.15 | 0.035 | 108.0 | 12 | 275.99 | 120.9 |
| 105 | 385.80 | 180.0 | 3.0 | 0.30 | 0.15 | 0.035 | 108.0 | 12 | 241.15 | 120.9 |
| 106 | 369.75 | 181.3 | 3.0 | 0.30 | 0.08 | 0.035 | 108.0 | 12 | 240.30 | 120.9 |
| 107 | 363.29 | 181.3 | 3.0 | 0.30 | 0.08 | 0.035 | 108.0 | 12 | 218.74 | 120.9 |
| 108 | 374.04 | 190.3 | 4.0 | 0.30 | 0.15 | 0.035 | 78.7 | 12 | 237.12 | 114.3 |
| 109 | 364.43 | 190.3 | 4.0 | 0.30 | 0.15 | 0.035 | 78.7 | 12 | 160.30 | 114.3 |
| 110 | 360.77 | 181.3 | 3.0 | 0.30 | 0.08 | 0.035 | 108.0 | 12 | 213.05 | 120.9 |
| 111 | 367.23 | 181.3 | 3.0 | 0.30 | 0.08 | 0.035 | 108.0 | 12 | 231.05 | 120.9 |
| 112 | 374.34 | 180.0 | 3.0 | 0.30 | 0.15 | 0.035 | 108.0 | 12 | 222.57 | 120.9 |
| 113 | 390.69 | 180.0 | 3.0 | 0.30 | 0.15 | 0.035 | 108.0 | 12 | 248.22 | 120.9 |
| 114 | 387.37 | 180.0 | 3.0 | 0.30 | 0.15 | 0.035 | 108.0 | 12 | 240.89 | 120.9 |
| 115 | 373.13 | 180.0 | 3.0 | 0.30 | 0.08 | 0.035 | 108.0 | 12 | 220.82 | 120.9 |
| 116 | 376.09 | 180.0 | 3.0 | 0.30 | 0.15 | 0.035 | 108.0 | 12 | 223.29 | 120.9 |
| 117 | 371.05 | 181.3 | 3.0 | 0.30 | 0.08 | 0.035 | 108.0 | 12 | 239.66 | 120.9 |
| 118 | 692.51 | 169.8 | 3.0 | 0.30 | 0.08 | 0.035 | 108.0 | 12 | 255.27 | 120.9 |
| 119 | 728.31 | 168.1 | 3.0 | 0.30 | 0.08 | 0.035 | 108.0 | 12 | 273.93 | 120.9 |
| 120 | 749.44 | 174.7 | 3.0 | 0.30 | 0.15 | 0.035 | 108.0 | 12 | 333.77 | 120.9 |
| 121 | 785.03 | 174.7 | 3.0 | 0.30 | 0.15 | 0.035 | 108.0 | 12 | 365.74 | 120.9 |
| 122 | 828.50 | 170.8 | 3.0 | 0.30 | 0.15 | 0.035 | 108.0 | 12 | 326.44 | 120.9 |
| 123 | 798.91 | 174.7 | 3.0 | 0.30 | 0.08 | 0.035 | 108.0 | 12 | 429.15 | 120.9 |
| 124 | 773.70 | 181.3 | 3.0 | 0.30 | 0.15 | 0.035 | 108.0 | 12 | 407.39 | 120.9 |
| 125 | 728.13 | 181.3 | 3.0 | 0.30 | 0.15 | 0.035 | 108.0 | 12 | 290.33 | 120.9 |
| 126 | 606.10 | 183.5 | 3.0 | 0.30 | 0.15 | 0.035 | 108.0 | 12 | 191.73 | 120.9 |
| 127 | 561.78 | 183.5 | 3.0 | 0.30 | 0.08 | 0.035 | 108.0 | 12 | 170.42 | 120.9 |
| 128 | 583.90 | 183.5 | 3.0 | 0.30 | 0.08 | 0.035 | 108.0 | 12 | 196.82 | 120.9 |
| 129 | 523.23 | 190.3 | 3.0 | 0.30 | 0.08 | 0.035 | 108.0 | 12 | 245.63 | 120.9 |
| 130 | 527.08 | 190.3 | 3.0 | 0.30 | 0.08 | 0.035 | 108.0 | 12 | 220.00 | 120.9 |
| 131 | 504.56 | 190.3 | 3.0 | 0.30 | 0.08 | 0.035 | 108.0 | 12 | 155.91 | 120.9 |
| 132 | 513.35 | 181.5 | 2.0 | 0.30 | 0.04 | 0.035 | 137.3 | 12 | 238.01 | 131.4 |
| 133 | 523.99 | 181.5 | 2.0 | 0.30 | 0.04 | 0.035 | 137.3 | 12 | 254.35 | 131.4 |
| 134 | 535.98 | 180.0 | 2.0 | 0.30 | 0.04 | 0.035 | 137.3 | 12 | 248.27 | 131.4 |
| 135 | 543.10 | 180.0 | 2.0 | 0.30 | 0.04 | 0.035 | 137.3 | 12 | 263.26 | 131.4 |
| 136 | 537.73 | 180.0 | 2.0 | 0.30 | 0.04 | 0.035 | 137.3 | 12 | 251.81 | 131.4 |
| 137 | 529.35 | 180.0 | 2.0 | 0.30 | 0.04 | 0.035 | 137.3 | 12 | 237.93 | 131.4 |
| 138 | 530.87 | 180.0 | 2.0 | 0.30 | 0.04 | 0.035 | 137.3 | 12 | 240.24 | 131.4 |
| 139 | 523.95 | 181.5 | 2.0 | 0.30 | 0.04 | 0.035 | 137.3 | 12 | 253.95 | 131.4 |

| | | | | | | | | | | |
|-----|--------|-------|-----|------|------|-------|-------|----|--------|-------|
| 140 | 711.52 | 177.1 | 2.0 | 0.30 | 0.04 | 0.035 | 137.3 | 12 | 399.44 | 131.4 |
| 141 | 739.12 | 177.1 | 2.0 | 0.30 | 0.04 | 0.035 | 137.3 | 12 | 402.30 | 131.4 |
| 142 | 733.86 | 177.1 | 2.0 | 0.30 | 0.04 | 0.035 | 137.3 | 12 | 402.63 | 131.4 |
| 143 | 752.23 | 177.1 | 2.0 | 0.30 | 0.04 | 0.035 | 137.3 | 12 | 398.49 | 131.4 |
| 144 | 750.20 | 177.7 | 2.0 | 0.30 | 0.04 | 0.035 | 137.3 | 12 | 381.91 | 131.4 |
| 145 | 751.96 | 180.0 | 2.0 | 0.30 | 0.04 | 0.035 | 137.3 | 12 | 409.34 | 131.4 |
| 146 | 735.11 | 180.0 | 2.0 | 0.30 | 0.04 | 0.035 | 137.3 | 12 | 367.12 | 131.4 |
| 147 | 717.14 | 181.5 | 2.0 | 0.30 | 0.04 | 0.035 | 137.3 | 12 | 372.71 | 131.4 |
| 148 | 693.55 | 181.5 | 2.0 | 0.30 | 0.04 | 0.035 | 137.3 | 12 | 337.97 | 131.4 |
| 149 | 665.73 | 182.2 | 2.0 | 0.30 | 0.04 | 0.035 | 137.3 | 12 | 318.19 | 131.4 |
| 150 | 647.12 | 182.2 | 2.0 | 0.30 | 0.04 | 0.035 | 137.3 | 12 | 300.90 | 131.4 |
| 151 | 625.62 | 182.2 | 2.0 | 0.30 | 0.04 | 0.035 | 137.3 | 12 | 281.85 | 131.4 |
| 152 | 622.54 | 182.2 | 2.0 | 0.30 | 0.04 | 0.035 | 137.3 | 12 | 279.26 | 131.4 |
| 153 | 643.86 | 182.2 | 2.0 | 0.30 | 0.04 | 0.035 | 137.3 | 12 | 297.37 | 131.4 |
| 154 | 666.12 | 182.2 | 2.0 | 0.30 | 0.04 | 0.035 | 137.3 | 12 | 318.83 | 131.4 |
| 155 | 684.37 | 182.2 | 2.0 | 0.30 | 0.04 | 0.035 | 137.3 | 12 | 339.51 | 131.4 |
| 156 | 697.59 | 181.5 | 2.0 | 0.30 | 0.04 | 0.035 | 137.3 | 12 | 343.22 | 131.4 |
| 157 | 714.38 | 181.5 | 2.0 | 0.30 | 0.04 | 0.035 | 137.3 | 12 | 367.71 | 131.4 |
| 158 | 728.28 | 180.0 | 2.0 | 0.30 | 0.04 | 0.035 | 137.3 | 12 | 357.67 | 131.4 |
| 159 | 723.15 | 180.0 | 2.0 | 0.30 | 0.04 | 0.035 | 137.3 | 12 | 350.31 | 131.4 |
| 160 | 711.50 | 181.5 | 2.0 | 0.30 | 0.04 | 0.035 | 137.3 | 12 | 362.99 | 131.4 |
| 161 | 714.19 | 181.5 | 2.0 | 0.30 | 0.04 | 0.035 | 137.3 | 12 | 367.55 | 131.4 |
| 162 | 704.30 | 181.5 | 2.0 | 0.30 | 0.04 | 0.035 | 137.3 | 12 | 352.21 | 131.4 |
| 163 | 693.01 | 181.5 | 2.0 | 0.30 | 0.04 | 0.035 | 137.3 | 12 | 337.52 | 131.4 |
| 164 | 684.58 | 182.2 | 2.0 | 0.30 | 0.04 | 0.035 | 137.3 | 12 | 339.70 | 131.4 |
| 165 | 644.00 | 172.6 | 2.0 | 0.30 | 0.15 | 0.035 | 137.3 | 12 | 225.33 | 131.4 |
| 166 | 660.34 | 177.1 | 2.0 | 0.30 | 0.15 | 0.035 | 137.3 | 12 | 284.55 | 131.4 |
| 167 | 675.27 | 180.0 | 2.0 | 0.30 | 0.15 | 0.035 | 137.3 | 12 | 260.81 | 131.4 |
| 168 | 664.87 | 177.1 | 3.0 | 0.30 | 0.08 | 0.035 | 108.0 | 12 | 287.23 | 120.9 |
| 169 | 645.86 | 180.0 | 3.0 | 0.30 | 0.08 | 0.035 | 108.0 | 12 | 281.99 | 120.9 |
| 170 | 663.98 | 182.2 | 2.0 | 0.30 | 0.15 | 0.035 | 137.3 | 12 | 244.83 | 131.4 |
| 171 | 636.58 | 182.2 | 2.0 | 0.30 | 0.15 | 0.035 | 137.3 | 12 | 218.90 | 131.4 |
| 172 | 629.88 | 182.2 | 2.0 | 0.30 | 0.15 | 0.035 | 137.3 | 12 | 223.47 | 131.4 |
| 173 | 548.79 | 182.2 | 2.0 | 0.30 | 0.15 | 0.035 | 137.3 | 12 | 172.90 | 131.4 |
| 174 | 513.42 | 190.3 | 2.0 | 0.30 | 0.08 | 0.035 | 137.3 | 12 | 214.86 | 131.4 |
| 175 | 500.47 | 183.3 | 1.0 | 0.30 | 0.04 | 0.035 | 166.7 | 12 | 221.26 | 153.0 |
| 176 | 505.64 | 183.3 | 1.0 | 0.30 | 0.04 | 0.035 | 166.7 | 12 | 223.68 | 153.0 |
| 177 | 514.41 | 190.3 | 2.0 | 0.30 | 0.08 | 0.035 | 137.3 | 12 | 183.42 | 131.4 |
| 178 | 519.89 | 183.3 | 1.0 | 0.30 | 0.04 | 0.035 | 166.7 | 12 | 231.40 | 153.0 |
| 179 | 527.90 | 183.3 | 1.0 | 0.30 | 0.04 | 0.035 | 166.7 | 12 | 236.88 | 153.0 |
| 180 | 533.79 | 183.3 | 1.0 | 0.30 | 0.04 | 0.035 | 166.7 | 12 | 241.47 | 153.0 |
| 181 | 539.36 | 182.1 | 1.0 | 0.30 | 0.04 | 0.035 | 166.7 | 12 | 242.18 | 153.0 |
| 182 | 536.84 | 182.1 | 1.0 | 0.30 | 0.04 | 0.035 | 166.7 | 12 | 239.89 | 153.0 |
| 183 | 536.58 | 182.1 | 1.0 | 0.30 | 0.04 | 0.035 | 166.7 | 12 | 239.62 | 153.0 |
| 184 | 533.22 | 183.3 | 1.0 | 0.30 | 0.04 | 0.035 | 166.7 | 12 | 240.92 | 153.0 |
| 185 | 529.72 | 183.3 | 1.0 | 0.30 | 0.04 | 0.035 | 166.7 | 12 | 238.25 | 153.0 |
| 186 | 533.04 | 180.0 | 3.0 | 0.30 | 0.08 | 0.035 | 108.0 | 12 | 224.33 | 120.9 |
| 187 | 566.50 | 173.8 | 1.0 | 0.30 | 0.04 | 0.035 | 166.7 | 12 | 250.01 | 153.0 |
| 188 | 572.60 | 177.2 | 1.0 | 0.30 | 0.04 | 0.035 | 166.7 | 12 | 260.21 | 153.0 |
| 189 | 585.13 | 180.1 | 1.0 | 0.30 | 0.04 | 0.035 | 166.7 | 12 | 261.01 | 153.0 |
| 190 | 570.96 | 183.3 | 1.0 | 0.30 | 0.04 | 0.035 | 166.7 | 12 | 255.82 | 153.0 |
| 191 | 545.85 | 183.3 | 1.0 | 0.30 | 0.04 | 0.035 | 166.7 | 12 | 235.00 | 153.0 |
| 192 | 544.37 | 183.3 | 1.0 | 0.30 | 0.04 | 0.035 | 166.7 | 12 | 235.54 | 153.0 |
| 193 | 541.35 | 183.3 | 1.0 | 0.30 | 0.04 | 0.035 | 166.7 | 12 | 235.07 | 153.0 |
| 194 | 541.17 | 183.3 | 1.0 | 0.30 | 0.04 | 0.035 | 166.7 | 12 | 235.22 | 153.0 |
| 195 | 545.47 | 183.3 | 1.0 | 0.30 | 0.04 | 0.035 | 166.7 | 12 | 237.64 | 153.0 |
| 196 | 549.85 | 183.3 | 1.0 | 0.30 | 0.04 | 0.035 | 166.7 | 12 | 240.08 | 153.0 |
| 197 | 555.19 | 183.3 | 1.0 | 0.30 | 0.04 | 0.035 | 166.7 | 12 | 243.26 | 153.0 |
| 198 | 562.18 | 183.3 | 1.0 | 0.30 | 0.04 | 0.035 | 166.7 | 12 | 248.05 | 153.0 |
| 199 | 568.68 | 183.3 | 1.0 | 0.30 | 0.04 | 0.035 | 166.7 | 12 | 253.14 | 153.0 |

| | | | | | | | | | | |
|-----|--------|-------|-----|------|------|-------|-------|----|--------|-------|
| 200 | 573.95 | 183.3 | 1.0 | 0.30 | 0.04 | 0.035 | 166.7 | 12 | 257.93 | 153.0 |
| 201 | 575.08 | 183.3 | 1.0 | 0.30 | 0.04 | 0.035 | 166.7 | 12 | 259.10 | 153.0 |
| 202 | 573.98 | 183.3 | 1.0 | 0.30 | 0.04 | 0.035 | 166.7 | 12 | 257.91 | 153.0 |
| 203 | 571.50 | 183.3 | 1.0 | 0.30 | 0.04 | 0.035 | 166.7 | 12 | 255.57 | 153.0 |
| 204 | 566.62 | 183.3 | 1.0 | 0.30 | 0.04 | 0.035 | 166.7 | 12 | 251.51 | 153.0 |
| 205 | 563.29 | 183.3 | 1.0 | 0.30 | 0.04 | 0.035 | 166.7 | 12 | 249.07 | 153.0 |
| 206 | 543.32 | 180.0 | 3.0 | 0.30 | 0.08 | 0.035 | 108.0 | 12 | 226.52 | 120.9 |
| 207 | 548.62 | 180.0 | 3.0 | 0.30 | 0.08 | 0.035 | 108.0 | 12 | 232.55 | 120.9 |
| 208 | 554.80 | 180.0 | 3.0 | 0.30 | 0.08 | 0.035 | 108.0 | 12 | 225.25 | 120.9 |

RECEPTOR SUMMARY FOR UNSTABLE HOURS

| REC # | CONC UG/M**3 | WD DEG | WS M/S | ZI M | W* M/S | L M | <----- PEAK SOURCE -----> | | | |
|----------|-----------------|-----------|-----------|---------|-----------|--------|---------------------------|----------------|------------|----------|
| | | | | | | | NS UG/M**3 | SRC UG/M**3 | CTRIB M | HPL M |
| 1 | 105.13 | 174.9 | 1.0 | 196.0 | 0.64 | -50.0 | 12 | 43.41 | 176.4 | 0.16 |
| 2 | 113.69 | 174.9 | 1.0 | 196.0 | 0.64 | -50.0 | 12 | 47.50 | 176.4 | 0.16 |
| 3 | 119.26 | 174.9 | 1.0 | 196.0 | 0.64 | -50.0 | 12 | 50.51 | 176.4 | 0.16 |
| 4 | 110.45 | 174.9 | 1.0 | 196.0 | 0.64 | -50.0 | 12 | 47.29 | 176.4 | 0.16 |
| 5 | 107.43 | 112.8 | 1.0 | 265.9 | 0.97 | -90.0 | 12 | 30.86 | 239.3 | 0.00 |
| 6 | 124.50 | 112.8 | 1.0 | 265.9 | 0.97 | -90.0 | 12 | 38.15 | 239.3 | 0.00 |
| 7 | 134.12 | 112.8 | 1.0 | 265.9 | 0.97 | -90.0 | 12 | 42.09 | 239.3 | 0.00 |
| 8 | 142.23 | 174.9 | 1.0 | 196.0 | 0.88 | -90.0 | 12 | 63.29 | 176.4 | 0.16 |
| 9 | 173.58 | 174.9 | 1.0 | 196.0 | 0.88 | -90.0 | 12 | 79.92 | 176.4 | 0.16 |
| 10 | 225.70 | 174.9 | 1.0 | 265.9 | 0.58 | -90.0 | 12 | 120.15 | 239.3 | 0.00 |
| 11 | 331.18 | 174.9 | 1.0 | 196.0 | 0.53 | -90.0 | 12 | 210.17 | 176.4 | 0.16 |
| 12 | 496.00 | 174.9 | 1.0 | 196.0 | 0.64 | -50.0 | 12 | 321.49 | 176.4 | 0.16 |
| 13 | 594.18 | 174.9 | 1.0 | 196.0 | 1.07 | -50.0 | 12 | 409.93 | 176.4 | 0.16 |
| 14 | 451.93 | 184.5 | 1.0 | 196.0 | 1.83 | -10.0 | 12 | 237.68 | 176.4 | 0.16 |
| 15 | 145.23 | 174.9 | 1.0 | 196.0 | 0.37 | -10.0 | 12 | 66.92 | 176.4 | 0.16 |
| 16 | 144.28 | 174.9 | 1.0 | 196.0 | 0.53 | -90.0 | 12 | 61.75 | 176.4 | 0.16 |
| 17 | 148.77 | 174.9 | 1.0 | 196.0 | 0.53 | -90.0 | 12 | 64.79 | 176.4 | 0.16 |
| 18 | 159.76 | 174.9 | 1.0 | 196.0 | 0.53 | -90.0 | 12 | 70.89 | 176.4 | 0.16 |
| 19 | 173.67 | 174.9 | 1.0 | 196.0 | 0.53 | -90.0 | 12 | 78.75 | 176.4 | 0.16 |
| 20 | 197.34 | 174.9 | 1.0 | 196.0 | 0.53 | -90.0 | 12 | 91.61 | 176.4 | 0.16 |
| 21 | 270.66 | 174.9 | 1.0 | 265.9 | 0.41 | -10.0 | 12 | 138.60 | 239.3 | 0.00 |
| 22 | 404.62 | 174.9 | 1.0 | 265.9 | 0.41 | -10.0 | 12 | 210.87 | 239.3 | 0.00 |
| 23 | 567.82 | 174.9 | 1.0 | 196.0 | 0.37 | -10.0 | 12 | 336.65 | 176.4 | 0.16 |
| 24 | 764.35 | 174.9 | 1.0 | 196.0 | 0.37 | -10.0 | 12 | 418.67 | 176.4 | 0.16 |
| 25 | 672.75 | 177.3 | 1.0 | 196.0 | 0.37 | -10.0 | 12 | 221.26 | 176.4 | 0.16 |
| 26 | 667.89 | 190.1 | 1.0 | 196.0 | 0.53 | -90.0 | 12 | 360.72 | 176.4 | 0.16 |
| 27 | 586.63 | 180.2 | 1.0 | 196.0 | 0.53 | -90.0 | 8 | 184.09 | 176.4 | 0.42 |
| 28 | 606.21 | 179.4 | 1.0 | 196.0 | 0.64 | -50.0 | 8 | 215.39 | 176.4 | 0.42 |
| 29 | 591.81 | 190.1 | 1.0 | 196.0 | 0.88 | -90.0 | 8 | 194.66 | 176.4 | 0.42 |
| 30 | 614.33 | 200.1 | 1.0 | 196.0 | 0.53 | -90.0 | 8 | 217.53 | 176.4 | 0.42 |
| 31 | 554.33 | 200.1 | 1.0 | 196.0 | 0.37 | -10.0 | 8 | 199.40 | 176.4 | 0.42 |
| 32 | 626.07 | 200.1 | 1.0 | 196.0 | 0.37 | -10.0 | 8 | 212.44 | 176.4 | 0.42 |
| 33 | 519.32 | 200.1 | 1.0 | 265.9 | 0.41 | -10.0 | 8 | 199.04 | 239.3 | 0.00 |
| 34 | 368.12 | 200.1 | 1.0 | 265.9 | 0.41 | -10.0 | 8 | 142.64 | 239.3 | 0.00 |
| 35 | 250.62 | 200.1 | 1.0 | 196.0 | 0.37 | -10.0 | 7 | 93.35 | 176.4 | 0.00 |
| 36 | 217.88 | 200.1 | 1.0 | 265.9 | 0.58 | -90.0 | 8 | 85.64 | 239.3 | 0.00 |
| 37 | 157.66 | 200.1 | 1.0 | 265.9 | 2.03 | -10.0 | 8 | 45.18 | 239.3 | 0.00 |
| 38 | 295.03 | 200.1 | 1.0 | 265.9 | 0.97 | -90.0 | 8 | 116.99 | 239.3 | 0.00 |
| 39 | 381.07 | 200.1 | 1.0 | 196.0 | 1.07 | -50.0 | 7 | 123.42 | 176.4 | 0.00 |
| 40 | 133.25 | 200.1 | 1.0 | 196.0 | 1.83 | -10.0 | 7 | 84.99 | 176.4 | 0.00 |
| 41 | 193.68 | 174.9 | 1.0 | 196.0 | 0.37 | -10.0 | 12 | 86.47 | 176.4 | 0.16 |
| 42 | 173.44 | 174.9 | 1.0 | 196.0 | 0.37 | -10.0 | 12 | 80.64 | 176.4 | 0.16 |

| | | | | | | | | | | |
|-----|--------|-------|-----|-------|------|-------|----|--------|-------|------|
| 43 | 189.40 | 174.9 | 1.0 | 265.9 | 0.24 | -50.0 | 12 | 104.65 | 239.3 | 0.00 |
| 44 | 258.23 | 174.9 | 1.0 | 265.9 | 0.24 | -50.0 | 12 | 145.31 | 239.3 | 0.00 |
| 45 | 268.50 | 174.9 | 1.0 | 265.9 | 0.24 | -50.0 | 12 | 144.40 | 239.3 | 0.00 |
| 46 | 570.43 | 174.9 | 1.0 | 196.0 | 0.21 | -50.0 | 12 | 368.16 | 176.4 | 0.16 |
| 47 | 800.83 | 174.9 | 1.0 | 196.0 | 0.21 | -50.0 | 12 | 351.93 | 176.4 | 0.16 |
| 48 | 669.99 | 174.9 | 1.0 | 196.0 | 0.21 | -50.0 | 1 | 195.55 | 176.4 | 0.44 |
| 49 | 695.56 | 184.5 | 1.0 | 196.0 | 0.37 | -10.0 | 12 | 349.55 | 176.4 | 0.16 |
| 50 | 610.73 | 184.5 | 1.0 | 196.0 | 0.37 | -10.0 | 1 | 174.27 | 176.4 | 0.44 |
| 51 | 628.28 | 184.5 | 1.0 | 196.0 | 0.37 | -10.0 | 8 | 218.61 | 176.4 | 0.42 |
| 52 | 605.99 | 200.1 | 1.0 | 196.0 | 0.37 | -10.0 | 12 | 190.63 | 176.4 | 0.16 |
| 53 | 597.20 | 184.5 | 1.0 | 196.0 | 0.21 | -50.0 | 8 | 207.19 | 176.4 | 0.42 |
| 54 | 687.77 | 184.3 | 1.0 | 196.0 | 0.21 | -50.0 | 8 | 206.37 | 176.4 | 0.42 |
| 55 | 704.18 | 190.1 | 1.0 | 196.0 | 0.21 | -50.0 | 12 | 273.36 | 176.4 | 0.16 |
| 56 | 668.56 | 190.1 | 1.0 | 196.0 | 0.21 | -50.0 | 8 | 166.38 | 176.4 | 0.42 |
| 57 | 649.43 | 200.1 | 1.0 | 196.0 | 0.21 | -50.0 | 1 | 180.76 | 176.4 | 0.44 |
| 58 | 630.45 | 200.1 | 1.0 | 196.0 | 0.18 | -90.0 | 8 | 212.93 | 176.4 | 0.42 |
| 59 | 312.50 | 200.1 | 1.0 | 196.0 | 0.18 | -90.0 | 7 | 121.52 | 176.4 | 0.00 |
| 60 | 175.55 | 200.1 | 1.0 | 196.0 | 0.53 | -90.0 | 8 | 39.61 | 176.4 | 0.42 |
| 61 | 231.61 | 174.9 | 1.0 | 265.9 | 0.19 | -90.0 | 12 | 127.53 | 239.3 | 0.00 |
| 62 | 205.25 | 174.9 | 1.0 | 196.0 | 0.37 | -10.0 | 12 | 94.31 | 176.4 | 0.16 |
| 63 | 266.19 | 174.9 | 1.0 | 265.9 | 0.24 | -50.0 | 12 | 144.62 | 239.3 | 0.00 |
| 64 | 459.31 | 174.9 | 1.0 | 196.0 | 0.18 | -90.0 | 12 | 301.94 | 176.4 | 0.16 |
| 65 | 341.28 | 174.9 | 1.0 | 265.9 | 0.24 | -50.0 | 12 | 185.69 | 239.3 | 0.00 |
| 66 | 564.64 | 174.9 | 1.0 | 196.0 | 0.21 | -50.0 | 12 | 363.53 | 176.4 | 0.16 |
| 67 | 822.09 | 174.9 | 1.0 | 196.0 | 0.21 | -50.0 | 12 | 392.79 | 176.4 | 0.16 |
| 68 | 787.84 | 179.4 | 1.0 | 196.0 | 0.21 | -50.0 | 12 | 325.07 | 176.4 | 0.16 |
| 69 | 701.25 | 174.9 | 1.0 | 196.0 | 0.21 | -50.0 | 8 | 210.60 | 176.4 | 0.42 |
| 70 | 671.60 | 179.4 | 1.0 | 196.0 | 0.21 | -50.0 | 8 | 220.95 | 176.4 | 0.42 |
| 71 | 713.12 | 190.1 | 1.0 | 196.0 | 0.21 | -50.0 | 12 | 322.23 | 176.4 | 0.16 |
| 72 | 729.56 | 184.5 | 1.0 | 196.0 | 0.18 | -90.0 | 1 | 189.07 | 176.4 | 0.44 |
| 73 | 723.91 | 190.1 | 1.0 | 196.0 | 0.18 | -90.0 | 12 | 369.37 | 176.4 | 0.16 |
| 74 | 721.39 | 190.1 | 1.0 | 196.0 | 0.18 | -90.0 | 12 | 274.25 | 176.4 | 0.16 |
| 75 | 676.17 | 190.1 | 1.0 | 196.0 | 0.18 | -90.0 | 1 | 192.81 | 176.4 | 0.44 |
| 76 | 653.75 | 200.1 | 1.0 | 196.0 | 0.21 | -50.0 | 12 | 233.79 | 176.4 | 0.16 |
| 77 | 664.21 | 200.1 | 1.0 | 196.0 | 0.18 | -90.0 | 8 | 221.42 | 176.4 | 0.42 |
| 78 | 498.18 | 200.1 | 1.0 | 196.0 | 0.18 | -90.0 | 7 | 159.18 | 176.4 | 0.00 |
| 79 | 254.57 | 200.1 | 1.0 | 265.9 | 0.24 | -50.0 | 8 | 96.50 | 239.3 | 0.00 |
| 80 | 330.54 | 174.9 | 1.0 | 265.9 | 0.19 | -90.0 | 12 | 174.03 | 239.3 | 0.00 |
| 81 | 283.90 | 174.9 | 1.0 | 265.9 | 0.19 | -90.0 | 12 | 160.76 | 239.3 | 0.00 |
| 82 | 390.31 | 174.9 | 1.0 | 265.9 | 0.19 | -90.0 | 12 | 210.59 | 239.3 | 0.00 |
| 83 | 635.71 | 174.9 | 1.0 | 196.0 | 0.18 | -90.0 | 12 | 363.99 | 176.4 | 0.16 |
| 84 | 479.58 | 174.9 | 1.0 | 196.0 | 0.18 | -90.0 | 12 | 319.80 | 176.4 | 0.16 |
| 85 | 518.23 | 174.9 | 1.0 | 196.0 | 0.21 | -50.0 | 12 | 332.10 | 176.4 | 0.16 |
| 86 | 804.00 | 174.9 | 1.0 | 196.0 | 0.21 | -50.0 | 12 | 397.02 | 176.4 | 0.16 |
| 87 | 801.19 | 180.2 | 1.0 | 196.0 | 0.18 | -90.0 | 12 | 319.04 | 176.4 | 0.16 |
| 88 | 739.25 | 184.5 | 1.0 | 196.0 | 0.18 | -90.0 | 12 | 288.11 | 176.4 | 0.16 |
| 89 | 659.29 | 190.1 | 1.0 | 265.9 | 0.19 | -90.0 | 12 | 264.00 | 239.3 | 0.00 |
| 90 | 628.95 | 190.1 | 1.0 | 265.9 | 0.19 | -90.0 | 12 | 177.98 | 239.3 | 0.00 |
| 91 | 659.97 | 190.1 | 1.0 | 265.9 | 0.19 | -90.0 | 8 | 185.15 | 239.3 | 0.00 |
| 92 | 688.44 | 190.1 | 1.0 | 196.0 | 0.18 | -90.0 | 12 | 183.45 | 176.4 | 0.16 |
| 93 | 690.48 | 190.1 | 1.0 | 196.0 | 0.18 | -90.0 | 8 | 200.31 | 176.4 | 0.42 |
| 94 | 629.23 | 200.1 | 1.0 | 196.0 | 0.18 | -90.0 | 1 | 197.65 | 176.4 | 0.44 |
| 95 | 644.30 | 200.1 | 1.0 | 196.0 | 0.18 | -90.0 | 8 | 200.05 | 176.4 | 0.42 |
| 96 | 571.90 | 200.1 | 1.0 | 196.0 | 0.18 | -90.0 | 8 | 183.00 | 176.4 | 0.42 |
| 97 | 317.86 | 200.1 | 1.0 | 196.0 | 0.18 | -90.0 | 7 | 112.30 | 176.4 | 0.00 |
| 98 | 427.68 | 174.9 | 1.0 | 265.9 | 0.19 | -90.0 | 12 | 213.04 | 239.3 | 0.00 |
| 99 | 376.89 | 174.9 | 1.0 | 265.9 | 0.19 | -90.0 | 12 | 207.04 | 239.3 | 0.00 |
| 100 | 653.23 | 174.9 | 1.0 | 265.9 | 0.19 | -90.0 | 12 | 288.53 | 239.3 | 0.00 |
| 101 | 704.54 | 174.9 | 1.0 | 196.0 | 0.18 | -90.0 | 12 | 361.51 | 176.4 | 0.16 |
| 102 | 620.57 | 174.9 | 1.0 | 196.0 | 0.18 | -90.0 | 12 | 395.44 | 176.4 | 0.16 |

| | | | | | | | | | | |
|-----|--------|-------|-----|-------|------|-------|----|--------|-------|------|
| 103 | 742.98 | 174.9 | 1.0 | 196.0 | 0.18 | -90.0 | 12 | 397.97 | 176.4 | 0.16 |
| 104 | 807.30 | 179.4 | 1.0 | 196.0 | 0.18 | -90.0 | 12 | 357.36 | 176.4 | 0.16 |
| 105 | 705.24 | 184.3 | 1.0 | 196.0 | 0.18 | -90.0 | 12 | 312.81 | 176.4 | 0.16 |
| 106 | 628.75 | 190.1 | 1.0 | 265.9 | 0.19 | -90.0 | 12 | 277.35 | 239.3 | 0.00 |
| 107 | 566.67 | 190.1 | 1.0 | 265.9 | 0.19 | -90.0 | 12 | 225.11 | 239.3 | 0.00 |
| 108 | 495.22 | 184.5 | 1.0 | 265.9 | 0.19 | -90.0 | 12 | 138.21 | 239.3 | 0.00 |
| 109 | 485.37 | 190.1 | 1.0 | 265.9 | 0.19 | -90.0 | 12 | 197.99 | 239.3 | 0.00 |
| 110 | 535.92 | 190.1 | 1.0 | 265.9 | 0.19 | -90.0 | 12 | 144.77 | 239.3 | 0.00 |
| 111 | 543.18 | 190.1 | 1.0 | 265.9 | 0.19 | -90.0 | 8 | 170.50 | 239.3 | 0.00 |
| 112 | 620.85 | 190.1 | 1.0 | 265.9 | 0.19 | -90.0 | 8 | 204.61 | 239.3 | 0.00 |
| 113 | 684.52 | 190.1 | 1.0 | 196.0 | 0.18 | -90.0 | 8 | 194.15 | 176.4 | 0.42 |
| 114 | 658.73 | 200.1 | 1.0 | 196.0 | 0.18 | -90.0 | 1 | 188.26 | 176.4 | 0.44 |
| 115 | 614.62 | 200.1 | 1.0 | 265.9 | 0.19 | -90.0 | 8 | 206.06 | 239.3 | 0.00 |
| 116 | 500.91 | 200.1 | 1.0 | 196.0 | 0.18 | -90.0 | 8 | 156.08 | 176.4 | 0.42 |
| 117 | 220.32 | 200.1 | 1.0 | 265.9 | 0.24 | -50.0 | 8 | 81.95 | 239.3 | 0.00 |
| 118 | 472.97 | 174.9 | 1.0 | 265.9 | 0.19 | -90.0 | 12 | 228.79 | 239.3 | 0.00 |
| 119 | 434.07 | 174.9 | 1.0 | 265.9 | 0.19 | -90.0 | 12 | 232.57 | 239.3 | 0.00 |
| 120 | 664.42 | 174.9 | 1.0 | 265.9 | 0.19 | -90.0 | 12 | 258.27 | 239.3 | 0.00 |
| 121 | 712.52 | 174.9 | 1.0 | 265.9 | 0.19 | -90.0 | 12 | 279.23 | 239.3 | 0.00 |
| 122 | 729.41 | 174.9 | 1.0 | 196.0 | 0.18 | -90.0 | 12 | 434.03 | 176.4 | 0.16 |
| 123 | 840.31 | 174.9 | 1.0 | 196.0 | 0.18 | -90.0 | 12 | 404.01 | 176.4 | 0.16 |
| 124 | 769.61 | 180.2 | 1.0 | 196.0 | 0.18 | -90.0 | 12 | 329.22 | 176.4 | 0.16 |
| 125 | 683.94 | 183.7 | 1.0 | 265.9 | 0.19 | -90.0 | 12 | 264.98 | 239.3 | 0.00 |
| 126 | 610.22 | 184.5 | 1.0 | 265.9 | 0.19 | -90.0 | 8 | 165.00 | 239.3 | 0.00 |
| 127 | 540.29 | 184.5 | 1.0 | 265.9 | 0.19 | -90.0 | 12 | 150.44 | 239.3 | 0.00 |
| 128 | 535.02 | 184.5 | 1.0 | 196.0 | 0.18 | -90.0 | 12 | 180.57 | 176.4 | 0.16 |
| 129 | 492.73 | 184.5 | 1.0 | 196.0 | 0.18 | -90.0 | 12 | 132.59 | 176.4 | 0.16 |
| 130 | 480.21 | 190.1 | 1.0 | 196.0 | 0.18 | -90.0 | 12 | 212.24 | 176.4 | 0.16 |
| 131 | 493.75 | 190.1 | 1.0 | 265.9 | 0.19 | -90.0 | 12 | 162.66 | 239.3 | 0.00 |
| 132 | 483.48 | 190.1 | 1.0 | 265.9 | 0.19 | -90.0 | 8 | 144.13 | 239.3 | 0.00 |
| 133 | 552.95 | 200.1 | 1.0 | 265.9 | 0.19 | -90.0 | 12 | 271.76 | 239.3 | 0.00 |
| 134 | 605.50 | 200.1 | 1.0 | 196.0 | 0.18 | -90.0 | 12 | 367.78 | 176.4 | 0.16 |
| 135 | 663.65 | 200.1 | 1.0 | 196.0 | 0.18 | -90.0 | 12 | 392.52 | 176.4 | 0.16 |
| 136 | 648.28 | 200.1 | 1.0 | 196.0 | 0.18 | -90.0 | 1 | 165.92 | 176.4 | 0.44 |
| 137 | 583.48 | 200.1 | 1.0 | 265.9 | 0.19 | -90.0 | 8 | 203.26 | 239.3 | 0.00 |
| 138 | 364.23 | 200.1 | 1.0 | 196.0 | 0.18 | -90.0 | 7 | 114.61 | 176.4 | 0.00 |
| 139 | 199.89 | 200.1 | 1.0 | 265.9 | 0.19 | -90.0 | 8 | 74.63 | 239.3 | 0.00 |
| 140 | 519.43 | 174.9 | 1.0 | 265.9 | 0.19 | -90.0 | 12 | 235.50 | 239.3 | 0.00 |
| 141 | 512.04 | 174.9 | 1.0 | 265.9 | 0.19 | -90.0 | 12 | 260.42 | 239.3 | 0.00 |
| 142 | 638.58 | 175.6 | 1.0 | 265.9 | 0.19 | -90.0 | 12 | 236.46 | 239.3 | 0.00 |
| 143 | 687.73 | 176.4 | 1.0 | 265.9 | 0.19 | -90.0 | 12 | 250.30 | 239.3 | 0.00 |
| 144 | 775.61 | 174.9 | 1.0 | 196.0 | 0.18 | -90.0 | 12 | 357.28 | 176.4 | 0.16 |
| 145 | 772.77 | 179.4 | 1.0 | 196.0 | 0.18 | -90.0 | 12 | 358.28 | 176.4 | 0.16 |
| 146 | 697.13 | 180.2 | 1.0 | 265.9 | 0.19 | -90.0 | 12 | 227.75 | 239.3 | 0.00 |
| 147 | 655.32 | 184.5 | 1.0 | 265.9 | 0.19 | -90.0 | 12 | 213.50 | 239.3 | 0.00 |
| 148 | 570.30 | 184.5 | 1.0 | 265.9 | 0.19 | -90.0 | 12 | 182.52 | 239.3 | 0.00 |
| 149 | 550.90 | 184.3 | 1.0 | 196.0 | 0.18 | -90.0 | 12 | 205.81 | 176.4 | 0.16 |
| 150 | 557.87 | 184.5 | 1.0 | 196.0 | 0.18 | -90.0 | 12 | 174.39 | 176.4 | 0.16 |
| 151 | 471.14 | 184.5 | 1.0 | 196.0 | 0.18 | -90.0 | 12 | 130.90 | 176.4 | 0.16 |
| 152 | 443.37 | 190.1 | 1.0 | 196.0 | 0.18 | -90.0 | 12 | 189.07 | 176.4 | 0.16 |
| 153 | 463.37 | 190.1 | 1.0 | 196.0 | 0.18 | -90.0 | 12 | 182.19 | 176.4 | 0.16 |
| 154 | 471.08 | 190.1 | 1.0 | 265.9 | 0.19 | -90.0 | 12 | 136.03 | 239.3 | 0.00 |
| 155 | 441.73 | 200.1 | 1.0 | 265.9 | 0.19 | -90.0 | 12 | 222.05 | 239.3 | 0.00 |
| 156 | 555.84 | 200.1 | 1.0 | 265.9 | 0.19 | -90.0 | 12 | 230.25 | 239.3 | 0.00 |
| 157 | 600.96 | 200.1 | 1.0 | 265.9 | 0.19 | -90.0 | 12 | 270.54 | 239.3 | 0.00 |
| 158 | 663.09 | 200.1 | 1.0 | 196.0 | 0.18 | -90.0 | 12 | 357.63 | 176.4 | 0.16 |
| 159 | 647.63 | 200.1 | 1.0 | 196.0 | 0.18 | -90.0 | 12 | 192.71 | 176.4 | 0.16 |
| 160 | 594.83 | 200.1 | 1.0 | 265.9 | 0.19 | -90.0 | 8 | 197.26 | 239.3 | 0.00 |
| 161 | 419.59 | 200.1 | 1.0 | 265.9 | 0.19 | -90.0 | 8 | 161.09 | 239.3 | 0.00 |
| 162 | 240.98 | 200.1 | 1.0 | 265.9 | 0.19 | -90.0 | 8 | 90.83 | 239.3 | 0.00 |

| | | | | | | | | | | |
|-----|--------|-------|-----|-------|------|-------|----|--------|-------|------|
| 163 | 288.56 | 200.1 | 1.0 | 265.9 | 0.19 | -90.0 | 8 | 105.69 | 239.3 | 0.00 |
| 164 | 360.11 | 200.1 | 1.0 | 265.9 | 0.19 | -90.0 | 8 | 122.28 | 239.3 | 0.00 |
| 165 | 547.06 | 174.9 | 1.0 | 265.9 | 0.19 | -90.0 | 12 | 208.20 | 239.3 | 0.00 |
| 166 | 612.10 | 174.9 | 1.0 | 265.9 | 0.19 | -90.0 | 12 | 223.63 | 239.3 | 0.00 |
| 167 | 645.37 | 179.4 | 1.0 | 265.9 | 0.19 | -90.0 | 12 | 244.07 | 239.3 | 0.00 |
| 168 | 723.70 | 176.4 | 1.0 | 265.9 | 0.19 | -90.0 | 12 | 237.82 | 239.3 | 0.00 |
| 169 | 710.86 | 179.4 | 1.0 | 265.9 | 0.19 | -90.0 | 12 | 242.11 | 239.3 | 0.00 |
| 170 | 649.37 | 183.7 | 1.0 | 265.9 | 0.19 | -90.0 | 12 | 240.71 | 239.3 | 0.00 |
| 171 | 576.04 | 184.3 | 1.0 | 265.9 | 0.19 | -90.0 | 12 | 205.21 | 239.3 | 0.00 |
| 172 | 579.51 | 183.7 | 1.0 | 196.0 | 0.18 | -90.0 | 12 | 229.38 | 176.4 | 0.16 |
| 173 | 600.27 | 184.5 | 1.0 | 196.0 | 0.18 | -90.0 | 12 | 210.79 | 176.4 | 0.16 |
| 174 | 502.32 | 184.5 | 1.0 | 196.0 | 0.18 | -90.0 | 12 | 153.01 | 176.4 | 0.16 |
| 175 | 423.78 | 190.1 | 1.0 | 196.0 | 0.18 | -90.0 | 12 | 186.84 | 176.4 | 0.16 |
| 176 | 409.74 | 190.1 | 1.0 | 196.0 | 0.18 | -90.0 | 12 | 140.23 | 176.4 | 0.16 |
| 177 | 442.76 | 190.1 | 1.0 | 196.0 | 0.18 | -90.0 | 12 | 156.29 | 176.4 | 0.16 |
| 178 | 421.87 | 190.1 | 1.0 | 265.9 | 0.19 | -90.0 | 8 | 118.37 | 239.3 | 0.00 |
| 179 | 482.08 | 200.1 | 1.0 | 265.9 | 0.19 | -90.0 | 12 | 206.45 | 239.3 | 0.00 |
| 180 | 574.69 | 200.1 | 1.0 | 265.9 | 0.19 | -90.0 | 12 | 190.10 | 239.3 | 0.00 |
| 181 | 642.32 | 200.1 | 1.0 | 265.9 | 0.19 | -90.0 | 12 | 200.36 | 239.3 | 0.00 |
| 182 | 559.92 | 200.1 | 1.0 | 265.9 | 0.19 | -90.0 | 8 | 185.81 | 239.3 | 0.00 |
| 183 | 347.76 | 200.1 | 1.0 | 265.9 | 0.19 | -90.0 | 8 | 131.90 | 239.3 | 0.00 |
| 184 | 337.02 | 200.1 | 1.0 | 265.9 | 0.19 | -90.0 | 8 | 122.78 | 239.3 | 0.00 |
| 185 | 448.68 | 200.1 | 1.0 | 265.9 | 0.19 | -90.0 | 8 | 139.80 | 239.3 | 0.00 |
| 186 | 666.40 | 179.4 | 1.0 | 196.0 | 0.18 | -90.0 | 12 | 246.23 | 176.4 | 0.16 |
| 187 | 542.33 | 176.0 | 1.0 | 265.9 | 0.19 | -90.0 | 12 | 196.55 | 239.3 | 0.00 |
| 188 | 584.52 | 178.0 | 1.0 | 265.9 | 0.19 | -90.0 | 12 | 206.91 | 239.3 | 0.00 |
| 189 | 623.25 | 183.7 | 1.0 | 265.9 | 0.19 | -90.0 | 12 | 249.33 | 239.3 | 0.00 |
| 190 | 568.09 | 183.7 | 1.0 | 265.9 | 0.19 | -90.0 | 12 | 212.21 | 239.3 | 0.00 |
| 191 | 611.44 | 183.7 | 1.0 | 196.0 | 0.18 | -90.0 | 12 | 258.37 | 176.4 | 0.16 |
| 192 | 616.39 | 184.3 | 1.0 | 196.0 | 0.18 | -90.0 | 12 | 228.79 | 176.4 | 0.16 |
| 193 | 515.20 | 184.5 | 1.0 | 196.0 | 0.18 | -90.0 | 12 | 167.66 | 176.4 | 0.16 |
| 194 | 422.91 | 190.1 | 1.0 | 196.0 | 0.18 | -90.0 | 12 | 193.24 | 176.4 | 0.16 |
| 195 | 374.36 | 190.1 | 1.0 | 196.0 | 0.18 | -90.0 | 12 | 116.47 | 176.4 | 0.16 |
| 196 | 354.62 | 190.1 | 1.0 | 196.0 | 0.18 | -90.0 | 12 | 90.78 | 176.4 | 0.16 |
| 197 | 380.32 | 190.1 | 1.0 | 265.9 | 0.19 | -90.0 | 8 | 105.99 | 239.3 | 0.00 |
| 198 | 398.48 | 200.1 | 1.0 | 265.9 | 0.19 | -90.0 | 12 | 190.41 | 239.3 | 0.00 |
| 199 | 513.35 | 200.1 | 1.0 | 265.9 | 0.19 | -90.0 | 12 | 152.66 | 239.3 | 0.00 |
| 200 | 585.71 | 200.1 | 1.0 | 265.9 | 0.19 | -90.0 | 12 | 166.60 | 239.3 | 0.00 |
| 201 | 534.47 | 200.1 | 1.0 | 265.9 | 0.19 | -90.0 | 8 | 177.60 | 239.3 | 0.00 |
| 202 | 323.78 | 200.1 | 1.0 | 265.9 | 0.19 | -90.0 | 8 | 120.56 | 239.3 | 0.00 |
| 203 | 479.51 | 200.1 | 1.0 | 265.9 | 0.19 | -90.0 | 8 | 151.20 | 239.3 | 0.00 |
| 204 | 411.73 | 200.1 | 1.0 | 265.9 | 0.19 | -90.0 | 8 | 126.52 | 239.3 | 0.00 |
| 205 | 298.12 | 200.1 | 1.0 | 265.9 | 0.19 | -90.0 | 8 | 97.61 | 239.3 | 0.00 |
| 206 | 593.90 | 179.4 | 1.0 | 196.0 | 0.18 | -90.0 | 12 | 213.28 | 176.4 | 0.16 |
| 207 | 547.54 | 179.4 | 1.0 | 265.9 | 0.19 | -90.0 | 12 | 191.27 | 239.3 | 0.00 |
| 208 | 559.15 | 180.2 | 1.0 | 265.9 | 0.19 | -90.0 | 12 | 196.99 | 239.3 | 0.00 |

**AIR QUALITY MODELING STUDY TO SUPPORT CHANGES TO
STATE IMPLEMENTATION PLAN
FOR
PLEASANT TOWNSHIP, GLADE TOWNSHIP, CITY OF WARREN**

JANUARY 1995

APPENDIX A

**SULFER DIOXIDE MODELING ANALYSIS
FOR
UNITED REFINING COMPANY**

**REPORT A188
NOVEMBER 1992**

SIGMA RESEARCH CORPORATION

*Sulfur Dioxide Modeling Analysis
for United Refining Company*

Warren Refinery

Report A188
November, 1992

Prepared by

Sigma Research Corporation
196 Baker Avenue
Concord, MA 01742

Prepared for

United Refining Company
15 Bradley Street
Warren, PA 16365

Table of Contents

| | |
|--|-----|
| Executive Summary | |
| 1. Introduction | 1-1 |
| 2. Refinery Description | 2-1 |
| 2.1 Site location | 2-1 |
| 2.2 Land Use Analysis | 2-1 |
| 2.3 Ambient SO ₂ Monitoring | 2-1 |
| 2.4 Source Characteristics | 2-5 |
| 3. Modeling Procedures | 3-1 |
| 3.1 ISCST2/RTDM | 3-1 |
| 3.1.1 Meteorological Data | 3-2 |
| 3.1.2 Receptors | 3-3 |
| 3.2 CTSCREEN | 3-3 |
| 3.2.1 Topography | 3-3 |
| 3.2.2 Receptors | 3-3 |
| 4. Background Concentrations | 4-1 |
| 4.1 ISCST2/RTDM | 4-1 |
| 4.2 CTSCREEN | 4-5 |
| 5. Air Quality Modeling Results | 5-1 |
| 5.1 ISCST2/RTDM | 5-1 |
| 5.2 CTSCREEN | 5-1 |

Appendix A: Correspondence Pertaining to Modeling Protocol

Appendix B: ISCST2/RTDM Predicted Exceedances with Corresponding Net Refinery Contributions

Appendix C: CTSCREEN Summary of Maximum Predicted Concentrations (SUMRE Files)

Executive Summary

A modeling analysis of sulfur dioxide concentrations has been conducted for the United Refining Company Warren refinery to assess compliance with the ambient air quality standards.

Three different air quality models were used in the analysis. The CTSCREEN model was applied at 124 receptors on the two hills just south of the refinery. Further CTSCREEN modeling was conducted using densely spaced receptors near four locations on the hills with high predicted concentrations. A total of 317 receptors were modeled in these four dense receptor grids. The ISCST2 and RTDM models were applied using one year of meteorological data at 315 receptors. These receptors were placed up to five kilometers from the refinery at locations not on the two hills south of the refinery. The EPA intermediate terrain procedures were used in combining the predicted concentration from these two models. Background concentrations included direct modeling of the Penelec Warren Station and estimated contributions from all other sources using data measured at two air quality monitors.

No violations of the air quality standards were predicted on the two hills just south of the refinery using the CTSCREEN model. However, many violations were predicted at other locations by the ISCST2/RTDM modeling. Most of these were solely attributable or largely due to the Penelec Warren Station. The modeled contributions from the refinery alone did not result in exceedances of any air quality standards.

The net contribution from the proposed modifications to the refinery to each of the predicted violations was calculated. The net contribution to each violation was below the significance concentration, indicating that the refinery modifications would not significantly impact locations not in attainment with the air quality standards.

1. Introduction

The United Refining Company refinery in Warren, Pennsylvania has been asked by the Pennsylvania Department of Environmental Resources (DER) to demonstrate compliance with ambient air quality standards for sulfur dioxide (SO_2). In addition, the proposed modifications to the refinery must be shown to not significantly impact predicted violations of the SO_2 standard. The procedures necessary for this demonstration are described in several documents. These include an initial March 1991 document, *Air Quality Analysis Protocol for Sulfur Dioxide for United Refining Company in Warren, PA* and several subsequent letters as the scope of the program changed. The correspondence relevant to the modeling procedures followed in this report are attached in Appendix A and, including the initial March 1991 document, are referred to as the Protocol.

Section 2 describes the refinery location, the land use analysis for urban/rural classification, the SO_2 monitoring network, and the refinery emissions sources. The modeling techniques, including the air quality models, meteorological data, and topographic inputs are discussed in Section 3. Section 4 presents the techniques used to determine the modeled and monitored background concentrations and the results of those analyses. The modeling results are summarized in Section 5.

2. Refinery Description

2.1 Site Location

The Warren Refinery is located in a valley along the Allegheny River in the hilly terrain of northwestern Pennsylvania. Figure 2-1 shows a map of the area and Figure 2-2 outlines the facility boundaries.

The refinery is at a base elevation of about 1200 feet above mean sea level (MSL). The valley is aligned southeast-northwest at the refinery and turns towards the southwest just downstream of the refinery. The ridges overlooking the valley are about 1900 feet above MSL. The valley floor is quite narrow east of the refinery (less than 500 m) but widens to over 1000 m at the refinery. Just west of the refinery at the confluence of the Allegheny River with Conewango Creek the valley floor is nearly 2000 meters wide. The refinery is just north of the river and is only about 300 m from the steeply rising ridge to the south of the river.

2.2 Land Use Analysis

The classification of the modeling domain as urban or rural is determined by a land use analysis. The analysis is conducted for the area circumscribed by a 3 km radius circle about the source using a land typing scheme. If more than 50% of the area is determined to be urban, the urban dispersion coefficients are used in the modeling. If less than 50% is urban, then the rural dispersion coefficients are used.

A brief analysis of the 6 km diameter circle centered on the refinery indicated that significantly more than half of the area was rural. Therefore, rural dispersion coefficients were used in the air quality modeling.

2.3 Ambient SO₂ Monitoring

The DER operated two air quality monitors measuring SO₂ in the vicinity of the Warren refinery. The monitor locations are noted in Figure 2-3. The Warren South monitor is located near the refinery on the valley floor. The Warren North monitor was located northeast of the refinery on the ridge overlooking the valley at an elevation of about 1900 feet.

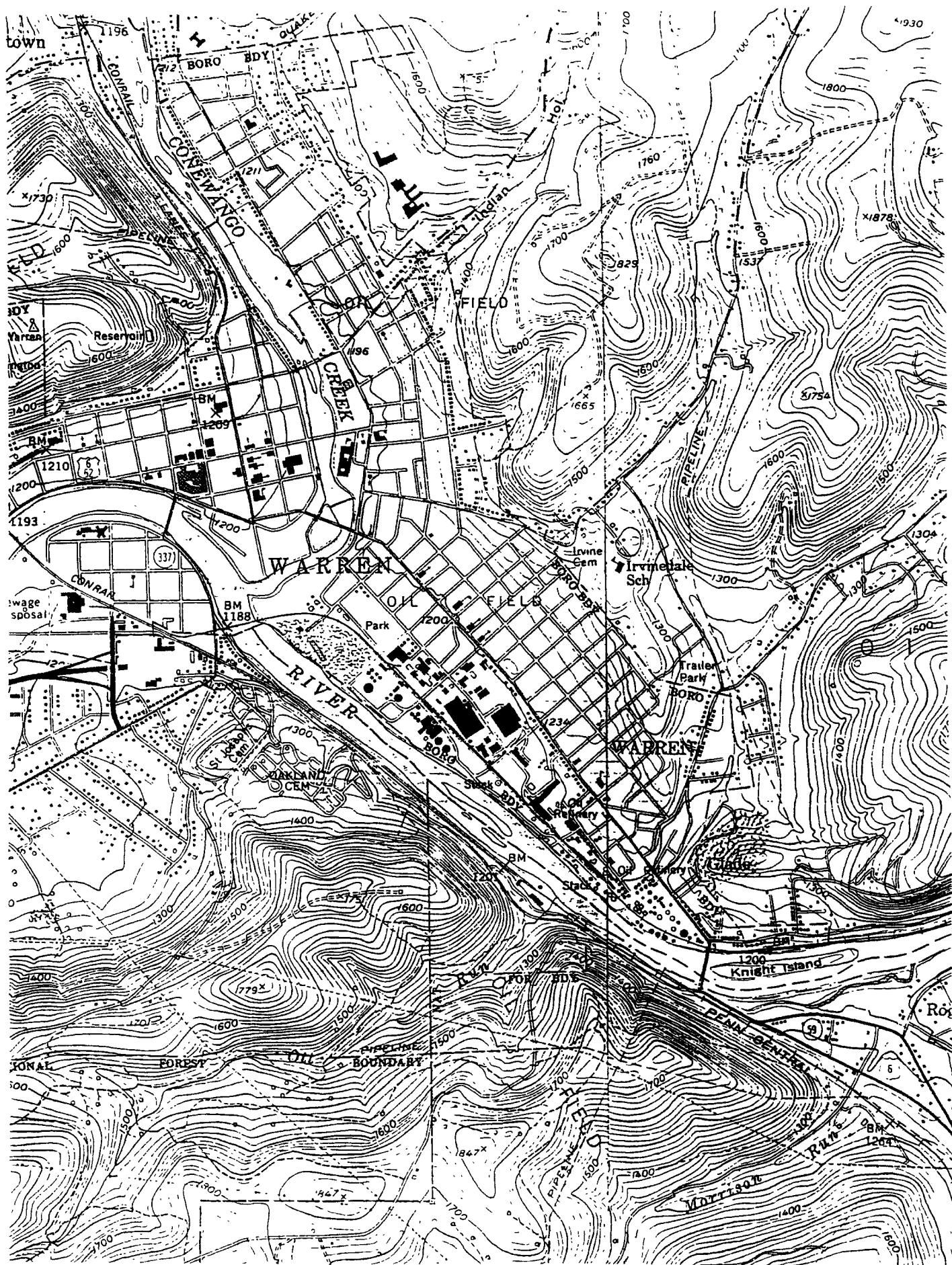


Figure 2-1. Map of Warren Refinery and surrounding area. (Scale 1:24,000)

(1 km = 4.2 cm)

2.4 Source Characteristics

Emission rates and stack parameters for the refinery sources of SO₂ are presented in two tables. Table 2-1 gives the emission characteristics for the current refinery configuration (per the 1987 Consent Order and Agreement). The proposed configuration is shown in Table 2-2. The proposed emission characteristics will be used to demonstrate compliance with air quality standards. The difference, or net change, from current to proposed emissions will be used to evaluate whether the proposed changes significantly impact the Conewango Township nonattainment area, or any other location with predicted violations.

Building dimension analyses were conducted for all sources with significant emissions for either the current or proposed configuration. These included sources A, B, C, E, F, G, H, I, J, L, O, V, and W. Within this list of sources, all but A (Boilerhouse), B (No. 4 Boiler), I (Pretreater Heater), and W (SRU2 Incinerator) had plumes that could be influenced by nearby buildings. Following the *Guideline for Determination of Good Engineering Practice Stack Height (Technical Support Document for the Stack Height Regulations - Revised)* (EPA-450/4-80-023R, 1986), the 11 May 1988 EPA memo from Tikvart to Daye and the 28 June 1989 EPA memo from Tikvart to the Regional Modeling contacts, the height and projected widths of the dominant nearby buildings were calculated. Because this work was done prior to the release of ISC2, the worst-case building height and width are used for all wind directions for stack heights greater than the building height plus one-half the lesser of the building height or width. Wind direction specific building dimensions were calculated for stacks below that height. Table 2-3 presents the building dimensions used in the modeling for the applicable sources. The dimensions are in the ISCST2 output format. The dominant building used to calculate the building dimensions are the Electrostatic Precipitator for sources C and L, the New Reformer Heater for sources E, F, G, and J, the Old Reformer Heater for sources G and J, the Crude Heater for source H, and Tank 344 for source V.

Table 2-1
United Refining Company
Current Emission Rates and Stack Conditions

2-6

| NOTE | ID | SOURCE | LB/HR SO2 | METERS EAST | METERS NORTH | BASE ELEV FEET | STACK HEIGHT METERS | STACK DIAM METERS | STACK TEMP K | STACK VEL MPS | SO2 RATE GPS |
|------|----|------------------------|--------------|----------------|-----------------|----------------------|---------------------------|-------------------------|--------------------|---------------------|--------------------|
| 1 | A | BOILERHOUSE | 100 | 0.0 | 0.0 | 1195 | 68.58 | 2.44 | 672.0 | 11.44 | 28.73 |
| | B | NO. 4 BOILER | 13 | -199.4 | 223.5 | 1195 | 45.72 | 1.70 | 505.4 | 12.37 | 1.64 |
| | C | FCC CHARGE HEATER | 15 | -210.1 | 222.2 | 1195 | 38.10 | 1.22 | 560.9 | 10.51 | 1.89 |
| | D | DHTI HEATER | 0.1 | 245.5 | -145.9 | 1195 | 30.48 | 0.91 | 922.0 | 3.88 | 0.01 |
| 2 | E | PREFRACT REBOILER EAST | 3.5 | 204.5 | -114.9 | 1195 | 12.19 | 0.61 | 699.8 | 10.03 | 0.44 |
| 2 | F | PREFRACT REBOILER WEST | 3.5 | 207.8 | -118.1 | 1195 | 12.19 | 0.61 | 699.8 | 10.03 | 0.44 |
| | G | OLD REFORMER HEATER | 67 | 250.7 | -148.1 | 1195 | 45.72 | 1.89 | 699.8 | 10.42 | 8.44 |
| 3 | H | CRUDE (WIECO) HEATER | 244 | 153.7 | -59.7 | 1195 | 45.72 | 2.59 | 699.8 | 15.05 | 32.51 |
| 3 | | VACUUM HEATER | 14 | | | | | | | | |
| | I | PRETREATER HEATER | 14 | 239.0 | -41.2 | 1195 | 51.82 | 1.89 | 588.7 | 3.84 | 1.76 |
| | J | NEW REFORMER HEATER | 9 | 241.2 | -141.6 | 1195 | 45.72 | 2.13 | 533.2 | 6.64 | 1.13 |
| | K | DEBUT REBOILER | 2 | 166.4 | -74.6 | 1195 | 30.48 | 0.85 | 922.0 | 12.79 | 0.25 |
| | L | FCC REGENERATOR | 337 | -165.7 | 284.3 | 1195 | 45.72 | 2.13 | 533.2 | 15.21 | 42.46 |
| 4 | M | COMBO FLARE (BLOWDOWN) | 0.4 | 153.0 | -143.5 | 1195 | 7.32 | 3.05 | 1255.0 | 2.00 | 0.05 |
| 4 | N | FCC FLARE (BLOWDOWN) | 0.1 | -468.8 | 321.8 | 1195 | 10.67 | 3.35 | 1255.0 | 0.42 | 0.01 |
| | O | NO. 5 BOILER | 1.2 | 227.2 | -113.8 | 1195 | 30.48 | 1.22 | 588.7 | 12.05 | 0.15 |
| 4 | Q | SAT GAS KVG | 0.1 | 113.8 | -103.0 | 1195 | 7.62 | 0.25 | 644.3 | 20.49 | 0.01 |
| 4 | U | T-241 HEATER | 0.3 | -811.5 | 742.9 | 1195 | 12.19 | 0.76 | 644.3 | 8.59 | 0.04 |
| 1 | W | SRU | 128 | | | | | | | | |
| 5 | | PDA HEATER | 1 | -18.7 | .120.5 | 1195 | 17.37 | 0.91 | 922.0 | 7.83 | 0.13 |
| | | TOTAL | 953.2 | | | | | | | | |

NOTES -

1. SOURCE A, THE BOILER HOUSE INCLUDES THE EMISSIONS FROM THE SULFUR PLANT, SOURCE W (STACK A EMITS 228 LBS/HR).
2. THE PREFRACTIONATOR REBOILER HAS TWO STACKS, SOURCES E & F.
3. SOURCE H, THE CRUDE HEATER, INCLUDES THE EMISSIONS FROM THE VACUUM HEATER (STACK H EMITS 258 LBS/HR).
4. THERE ARE NO INTERIM LIMITS FOR THESE SOURCES. SO2 RATES ARE LESS THAN ONE POUND PER HOUR.
5. THIS SOURCE WAS DISMANTLED.

Table 2-2
United Refining Company
Proposed Emission Rates and Stack Conditions

| NOTE | ID | SOURCE | LB/HR SO2 | METERS EAST | METERS NORTH | BASE ELEV FEET | STACK HEIGHT METERS | STACK DIAM METERS | STACK TEMP K | STACK VEL MPS | SO2 RATE GPS |
|------|----|------------------------|--------------|----------------|-----------------|----------------------|---------------------------|-------------------------|--------------------|---------------------|--------------------|
| | A | BOILERHOUSE | 195.1 | 0.0 | 0.0 | 1195 | 68.58 | 2.44 | 672.0 | 11.44 | 24.58 |
| | B | NO. 4 BOILER | 24.3 | -199.4 | 223.5 | 1195 | 45.72 | 1.70 | 505.4 | 12.37 | 3.06 |
| | C | FCC CHARGE HEATER | 1.1 | -210.1 | 222.2 | 1195 | 38.10 | 1.22 | 560.9 | 10.51 | 0.14 |
| | D | DHT1 HEATER | 0.1 | 245.5 | -145.9 | 1195 | 30.48 | 0.91 | 922.0 | 3.88 | 0.01 |
| 1 | E | PREFRACT REBOILER EAST | 9.0 | 204.5 | -114.9 | 1195 | 12.19 | 0.61 | 699.8 | 10.03 | 1.13 |
| 1 | F | PREFRACT REBOILER WEST | 9.0 | 207.8 | -118.1 | 1195 | 12.19 | 0.61 | 699.8 | 10.03 | 1.13 |
| | G | OLD REFORMER HEATER | 91.3 | 250.7 | -148.1 | 1195 | 45.72 | 1.89 | 699.8 | 10.42 | 11.50 |
| 2 | H | CRUDE (WHECO) HEATER | 207.5 | 153.7 | -59.7 | 1195 | 45.72 | 2.59 | 699.8 | 15.05 | 26.27 |
| 2 | | VACUUM HEATER | 1 | | | | | | | | |
| | I | PRETREATER HEATER | 28.0 | 239.0 | -41.2 | 1195 | 51.82 | 1.89 | 588.7 | 3.84 | 3.53 |
| | J | NEW REFORMER HEATER | 2.2 | 241.2 | -141.6 | 1195 | 45.72 | 2.13 | 533.2 | 6.64 | 0.28 |
| | K | DEBUT REBOILER | 0.4 | 166.4 | -74.6 | 1195 | 30.48 | 0.85 | 922.0 | 12.79 | 0.05 |
| | L | FCC REGENERATOR | 285.0 | -165.7 | 284.3 | 1195 | 45.72 | 2.13 | 533.2 | 15.21 | 35.91 |
| | M | COMBO FLARE (BLOWDOWN) | 0.4 | 153.0 | -143.5 | 1195 | 7.32 | 3.05 | 1255.0 | 2.00 | 0.05 |
| | N | FCC FLARE (BLOWDOWN) | 0.1 | -468.8 | 321.8 | 1195 | 10.67 | 3.35 | 1255.0 | 0.42 | 0.01 |
| | O | NO. 5 BOILER | 1.2 | 227.2 | -113.8 | 1195 | 30.48 | 1.22 | 588.7 | 12.05 | 0.15 |
| | Q | SAT GAS KVG | 0.1 | 113.8 | -103.0 | 1195 | 7.62 | 0.25 | 644.3 | 20.49 | 0.01 |
| | U | T-241 HEATER | 0.3 | -811.5 | 742.9 | 1195 | 12.19 | 0.76 | 644.3 | 8.59 | 0.04 |
| | V | DIIT2 HEATER (NEW) | 33.4 | 273.8 | -13.2 | 1195 | 30.48 | 1.07 | 714.0 | 11.35 | 4.21 |
| | W | SRU2 INCINERATOR (NEW) | 12.0 | 38.5 | -43.0 | 1195 | 38.10 | 0.76 | 922.0 | 18.94 | 1.51 |
| | | TOTAL | 901.5 | | | | | | | | |

NOTES -

1. THE PREFRACTIONATOR REBOILER HAS TWO STACKS, SOURCES E & F.
2. SOURCE H, THE CRUDE HEATER, INCLUDES THE EMISSIONS FROM THE VACUUM HEATER (SOURCE H EMITS 208.5 LBS/HR).

Table 2-3
Direction Specific Building Dimensions

SOURCE ID: C

| IFV | BH | BW | WAK |
|-----|-------|-------|-----|-----|-------|-------|-----|-----|-------|-------|-----|-----|-------|-------|-----|-----|-------|-------|-----|-----|-------|-------|-----|
| 1 | 22.2, | 15.4, | 0 | 2 | 22.2, | 15.4, | 0 | 3 | 22.2, | 15.4, | 0 | 4 | 22.2, | 15.4, | 0 | 5 | 22.2, | 15.4, | 0 | 6 | 22.2, | 15.4, | 0 |
| 7 | 22.2, | 15.4, | 0 | 8 | 22.2, | 15.4, | 0 | 9 | 22.2, | 15.4, | 0 | 10 | 22.2, | 15.4, | 0 | 11 | 22.2, | 15.4, | 0 | 12 | 22.2, | 15.4, | 0 |
| 13 | 22.2, | 15.4, | 0 | 14 | 22.2, | 15.4, | 0 | 15 | 22.2, | 15.4, | 0 | 16 | 22.2, | 15.4, | 0 | 17 | 22.2, | 15.4, | 0 | 18 | 22.2, | 15.4, | 0 |
| 19 | 22.2, | 15.4, | 0 | 20 | 22.2, | 15.4, | 0 | 21 | 22.2, | 15.4, | 0 | 22 | 22.2, | 15.4, | 0 | 23 | 22.2, | 15.4, | 0 | 24 | 22.2, | 15.4, | 0 |
| 25 | 22.2, | 15.4, | 0 | 26 | 22.2, | 15.4, | 0 | 27 | 22.2, | 15.4, | 0 | 28 | 22.2, | 15.4, | 0 | 29 | 22.2, | 15.4, | 0 | 30 | 22.2, | 15.4, | 0 |
| 31 | 22.2, | 15.4, | 0 | 32 | 22.2, | 15.4, | 0 | 33 | 22.2, | 15.4, | 0 | 34 | 22.2, | 15.4, | 0 | 35 | 22.2, | 15.4, | 0 | 36 | 22.2, | 15.4, | 0 |

SOURCE ID: E

| IFV | BH | BW | WAK |
|-----|-------|-------|-----|-----|-------|-------|-----|-----|-------|-------|-----|-----|-------|-------|-----|-----|-------|-------|-----|-----|-------|-------|-----|
| 1 | 7.9, | 12.4, | 0 | 2 | 7.9, | 12.7, | 0 | 3 | 7.9, | 12.7, | 0 | 4 | 7.9, | 12.6, | 0 | 5 | 7.9, | 12.2, | 0 | 6 | 7.9, | 11.9, | 0 |
| 7 | 7.9, | 11.8, | 0 | 8 | 7.9, | 11.3, | 0 | 9 | 7.9, | 10.5, | 0 | 10 | 7.9, | 9.4, | 0 | 11 | 7.9, | 8.0, | 0 | 12 | 7.9, | 6.4, | 0 |
| 13 | 7.9, | 4.5, | 0 | 14 | 7.9, | 5.7, | 0 | 15 | 7.9, | 7.6, | 0 | 16 | 7.9, | 9.3, | 0 | 17 | 7.9, | 10.6, | 0 | 18 | 7.9, | 11.7, | 0 |
| 19 | 7.9, | 12.4, | 0 | 20 | 7.9, | 12.7, | 0 | 21 | 7.9, | 12.7, | 0 | 22 | 7.9, | 12.6, | 0 | 23 | 7.9, | 12.2, | 0 | 24 | 7.9, | 11.9, | 0 |
| 25 | 7.9, | 11.8, | 0 | 26 | 7.9, | 11.3, | 0 | 27 | 7.9, | 10.5, | 0 | 28 | 19.8, | 17.3, | 0 | 29 | 25.0, | 14.8, | 0 | 30 | 25.0, | 14.3, | 0 |
| 31 | 25.0, | 13.4, | 0 | 32 | 25.0, | 13.0, | 0 | 33 | 14.6, | 15.2, | 0 | 34 | 14.6, | 15.2, | 0 | 35 | 14.6, | 15.2, | 0 | 36 | 7.9, | 11.7, | 0 |

三

SOURCE ID: F

| IFV | BH | BW | WAK |
|-----|-------|-------|-----|-----|-------|-------|-----|-----|-------|-------|-----|-----|-------|-------|-----|-----|-------|-------|-----|-----|-------|-------|-----|
| 1 | 7.9, | 12.4, | 0 | 2 | 7.9, | 12.7, | 0 | 3 | 7.9, | 12.7, | 0 | 4 | 7.9, | 12.6, | 0 | 5 | 7.9, | 12.2, | 0 | 6 | 7.9, | 11.9, | 0 |
| 7 | 7.9, | 11.8, | 0 | 8 | 7.9, | 11.3, | 0 | 9 | 7.9, | 10.5, | 0 | 10 | 19.8, | 18.0, | 0 | 11 | 19.8, | 16.9, | 0 | 12 | 7.9, | 6.4, | 0 |
| 13 | 7.9, | 4.5, | 0 | 14 | 7.9, | 5.7, | 0 | 15 | 7.9, | 7.6, | 0 | 16 | 7.9, | 9.3, | 0 | 17 | 7.9, | 10.6, | 0 | 18 | 7.9, | 11.7, | 0 |
| 19 | 7.9, | 12.4, | 0 | 20 | 7.9, | 12.7, | 0 | 21 | 7.9, | 12.7, | 0 | 22 | 7.9, | 12.6, | 0 | 23 | 7.9, | 12.2, | 0 | 24 | 7.9, | 11.9, | 0 |
| 25 | 7.9, | 11.8, | 0 | 26 | 7.9, | 11.3, | 0 | 27 | 7.9, | 10.5, | 0 | 28 | 25.0, | 14.9, | 0 | 29 | 25.0, | 14.8, | 0 | 30 | 25.0, | 14.3, | 0 |
| 31 | 25.0, | 13.4, | 0 | 32 | 25.0, | 13.1, | 0 | 33 | 14.6, | 15.2, | 0 | 34 | 14.6, | 15.2, | 0 | 35 | 14.6, | 15.2, | 0 | 36 | 7.9, | 11.7, | 0 |

SOURCE ID: G

| IFV | BH | BW | WAK |
|-----|-------|-------|-----|-----|-------|-------|-----|-----|-------|-------|-----|-----|-------|-------|-----|-----|-------|-------|-----|-----|-------|-------|-----|
| 1 | 19.8, | 21.0, | 0 | 2 | 19.8, | 21.0, | 0 | 3 | 19.8, | 21.0, | 0 | 4 | 19.8, | 21.0, | 0 | 5 | 19.8, | 21.0, | 0 | 6 | 19.8, | 21.0, | 0 |
| 7 | 19.8, | 21.0, | 0 | 8 | 19.8, | 21.0, | 0 | 9 | 19.8, | 21.0, | 0 | 10 | 19.8, | 21.0, | 0 | 11 | 19.8, | 21.0, | 0 | 12 | 19.8, | 21.0, | 0 |
| 13 | 19.8, | 21.0, | 0 | 14 | 19.8, | 21.0, | 0 | 15 | 19.8, | 21.0, | 0 | 16 | 19.8, | 21.0, | 0 | 17 | 19.8, | 21.0, | 0 | 18 | 19.8, | 21.0, | 0 |
| 19 | 19.8, | 21.0, | 0 | 20 | 19.8, | 21.0, | 0 | 21 | 19.8, | 21.0, | 0 | 22 | 19.8, | 21.0, | 0 | 23 | 19.8, | 21.0, | 0 | 24 | 19.8, | 21.0, | 0 |
| 25 | 19.8, | 21.0, | 0 | 26 | 19.8, | 21.0, | 0 | 27 | 19.8, | 21.0, | 0 | 28 | 19.8, | 21.0, | 0 | 29 | 19.8, | 21.0, | 0 | 30 | 19.8, | 21.0, | 0 |
| 31 | 19.8, | 21.0, | 0 | 32 | 19.8, | 21.0, | 0 | 33 | 19.8, | 21.0, | 0 | 34 | 19.8, | 21.0, | 0 | 35 | 19.8, | 21.0, | 0 | 36 | 19.8, | 21.0, | 0 |

Table 2-3 - Continued
Direction Specific Building Dimensions

SOURCE ID: H

| | IFV | BH | BW | WAK | IFV | BH | BW | WAK | IFV | BH | BW | WAK | IFV | BH | BW | WAK | IFV | BH | BW | WAK |
|----|-------|-------|----|-----|-----|-------|-------|-----|-----|-------|-------|-----|-----|-------|-------|-----|-----|-------|-------|-----|
| 1 | 19.5, | 19.5, | 0 | | 2 | 19.5, | 19.5, | 0 | 3 | 19.5, | 19.5, | 0 | 4 | 19.5, | 19.5, | 0 | 5 | 19.5, | 19.5, | 0 |
| 7 | 19.5, | 19.5, | 0 | | 8 | 19.5, | 19.5, | 0 | 9 | 19.5, | 19.5, | 0 | 10 | 19.5, | 19.5, | 0 | 11 | 19.5, | 19.5, | 0 |
| 13 | 19.5, | 19.5, | 0 | | 14 | 19.5, | 19.5, | 0 | 15 | 19.5, | 19.5, | 0 | 16 | 19.5, | 19.5, | 0 | 17 | 19.5, | 19.5, | 0 |
| 19 | 19.5, | 19.5, | 0 | | 20 | 19.5, | 19.5, | 0 | 21 | 19.5, | 19.5, | 0 | 22 | 19.5, | 19.5, | 0 | 23 | 19.5, | 19.5, | 0 |
| 25 | 19.5, | 19.5, | 0 | | 26 | 19.5, | 19.5, | 0 | 27 | 19.5, | 19.5, | 0 | 28 | 19.5, | 19.5, | 0 | 29 | 19.5, | 19.5, | 0 |
| 31 | 19.5, | 19.5, | 0 | | 32 | 19.5, | 19.5, | 0 | 33 | 19.5, | 19.5, | 0 | 34 | 19.5, | 19.5, | 0 | 35 | 19.5, | 19.5, | 0 |
| | | | | | | | | | | | | | | | | | 36 | 19.5, | 19.5, | 0 |

SOURCE ID: J

| | IFV | BH | BW | WAK | IFV | BH | BW | WAK | IFV | BH | BW | WAK | IFV | BH | BW | WAK | IFV | BH | BW | WAK |
|----|-------|-------|----|-----|-----|-------|-------|-----|-----|-------|-------|-----|-----|-------|-------|-----|-----|-------|-------|-----|
| 1 | 19.8, | 21.0, | 0 | | 2 | 19.8, | 21.0, | 0 | 3 | 19.8, | 21.0, | 0 | 4 | 19.8, | 21.0, | 0 | 5 | 19.8, | 21.0, | 0 |
| 7 | 19.8, | 21.0, | 0 | | 8 | 19.8, | 21.0, | 0 | 9 | 19.8, | 21.0, | 0 | 10 | 19.8, | 21.0, | 0 | 11 | 19.8, | 21.0, | 0 |
| 13 | 19.8, | 21.0, | 0 | | 14 | 19.8, | 21.0, | 0 | 15 | 19.8, | 21.0, | 0 | 16 | 19.8, | 21.0, | 0 | 17 | 19.8, | 21.0, | 0 |
| 19 | 19.8, | 21.0, | 0 | | 20 | 19.8, | 21.0, | 0 | 21 | 19.8, | 21.0, | 0 | 22 | 19.8, | 21.0, | 0 | 23 | 19.8, | 21.0, | 0 |
| 25 | 19.8, | 21.0, | 0 | | 26 | 19.8, | 21.0, | 0 | 27 | 19.8, | 21.0, | 0 | 28 | 19.8, | 21.0, | 0 | 29 | 19.8, | 21.0, | 0 |
| 31 | 19.8, | 21.0, | 0 | | 32 | 19.8, | 21.0, | 0 | 33 | 19.8, | 21.0, | 0 | 34 | 19.8, | 21.0, | 0 | 35 | 19.8, | 21.0, | 0 |
| | | | | | | | | | | | | | | | | | 36 | 19.8, | 21.0, | 0 |

2-9

SOURCE ID: L

| | IFV | BH | BW | WAK | IFV | BH | BW | WAK | IFV | BH | BW | WAK | IFV | BH | BW | WAK | IFV | BH | BW | WAK |
|----|-------|-------|----|-----|-----|-------|-------|-----|-----|-------|-------|-----|-----|-------|-------|-----|-----|-------|-------|-----|
| 1 | 22.2, | 17.5, | 0 | | 2 | 22.2, | 17.5, | 0 | 3 | 22.2, | 17.5, | 0 | 4 | 22.2, | 17.5, | 0 | 5 | 22.2, | 17.5, | 0 |
| 7 | 22.2, | 17.5, | 0 | | 8 | 22.2, | 17.5, | 0 | 9 | 22.2, | 17.5, | 0 | 10 | 22.2, | 17.5, | 0 | 11 | 22.2, | 17.5, | 0 |
| 13 | 22.2, | 17.5, | 0 | | 14 | 22.2, | 17.5, | 0 | 15 | 22.2, | 17.5, | 0 | 16 | 22.2, | 17.5, | 0 | 17 | 22.2, | 17.5, | 0 |
| 19 | 22.2, | 17.5, | 0 | | 20 | 22.2, | 17.5, | 0 | 21 | 22.2, | 17.5, | 0 | 22 | 22.2, | 17.5, | 0 | 23 | 22.2, | 17.5, | 0 |
| 25 | 22.2, | 17.5, | 0 | | 26 | 22.2, | 17.5, | 0 | 27 | 22.2, | 17.5, | 0 | 28 | 22.2, | 17.5, | 0 | 29 | 22.2, | 17.5, | 0 |
| 31 | 22.2, | 17.5, | 0 | | 32 | 22.2, | 17.5, | 0 | 33 | 22.2, | 17.5, | 0 | 34 | 22.2, | 17.5, | 0 | 35 | 22.2, | 17.5, | 0 |
| | | | | | | | | | | | | | | | | | 36 | 22.2, | 17.5, | 0 |

SOURCE ID: O

| | IFV | BH | BW | WAK | IFV | BH | BW | WAK | IFV | BH | BW | WAK | IFV | BH | BW | WAK | IFV | BH | BW | WAK |
|----|-------|-------|----|-----|-----|-------|-------|-----|-----|-------|-------|-----|-----|-------|-------|-----|-----|-------|-------|-----|
| 1 | 14.6, | 15.2, | 0 | | 2 | 0.0, | 0.0, | 0 | 3 | 0.0, | 0.0, | 0 | 4 | 0.0, | 0.0, | 0 | 5 | 0.0, | 0.0, | 0 |
| 7 | 0.0, | 0.0, | 0 | | 8 | 0.0, | 0.0, | 0 | 9 | 0.0, | 0.0, | 0 | 10 | 0.0, | 0.0, | 0 | 11 | 0.0, | 0.0, | 0 |
| 13 | 25.0, | 13.4, | 0 | | 14 | 25.0, | 13.5, | 0 | 15 | 25.0, | 14.4, | 0 | 16 | 25.0, | 14.8, | 0 | 17 | 19.8, | 19.7, | 0 |
| 19 | 0.0, | 0.0, | 0 | | 20 | 0.0, | 0.0, | 0 | 21 | 0.0, | 0.0, | 0 | 22 | 0.0, | 0.0, | 0 | 23 | 0.0, | 0.0, | 0 |
| 25 | 0.0, | 0.0, | 0 | | 26 | 0.0, | 0.0, | 0 | 27 | 0.0, | 0.0, | 0 | 28 | 0.0, | 0.0, | 0 | 29 | 0.0, | 0.0, | 0 |
| 31 | 25.0, | 13.4, | 0 | | 32 | 25.0, | 13.5, | 0 | 33 | 25.0, | 14.4, | 0 | 34 | 25.0, | 14.8, | 0 | 35 | 19.8, | 19.7, | 0 |
| | | | | | | | | | | | | | | | | | 36 | 19.8, | 20.6, | 0 |

Table 2-3 - Concluded
Direction Specific Building Dimensions

| SOURCE ID: V | IFV | BH | BW | WAK | IFV | BH | BW | WAK | IFV | BH | BW | WAK | IFV | BH | BW | WAK | IFV | BH | BW | WAK |
|--------------|-------|-------|----|-----|-------|-------|----|-----|-----|-------|-------|-----|-----|-------|-------|-----|-----|-------|-------|-----|
| 1 | 14.6, | 15.2, | 0 | 2 | 14.6, | 15.2, | 0 | | 3 | 14.6, | 15.2, | 0 | 4 | 14.6, | 15.2, | 0 | 5 | 14.6, | 15.2, | 0 |
| 7 | 14.6, | 15.2, | 0 | 8 | 14.6, | 15.2, | 0 | | 9 | 14.6, | 15.2, | 0 | 10 | 14.6, | 15.2, | 0 | 11 | 14.6, | 15.2, | 0 |
| 13 | 14.6, | 15.2, | 0 | 14 | 14.6, | 15.2, | 0 | | 15 | 14.6, | 15.2, | 0 | 16 | 14.6, | 15.2, | 0 | 17 | 14.6, | 15.2, | 0 |
| 19 | 14.6, | 15.2, | 0 | 20 | 14.6, | 15.2, | 0 | | 21 | 14.6, | 15.2, | 0 | 22 | 14.6, | 15.2, | 0 | 23 | 14.6, | 15.2, | 0 |
| 25 | 14.6, | 15.2, | 0 | 26 | 14.6, | 15.2, | 0 | | 27 | 14.6, | 15.2, | 0 | 28 | 14.6, | 15.2, | 0 | 29 | 14.6, | 15.2, | 0 |
| 31 | 14.6, | 15.2, | 0 | 32 | 14.6, | 15.2, | 0 | | 33 | 14.6, | 15.2, | 0 | 34 | 14.6, | 15.2, | 0 | 35 | 14.6, | 15.2, | 0 |
| | | | | | | | | | | | | | | | | | | | | |

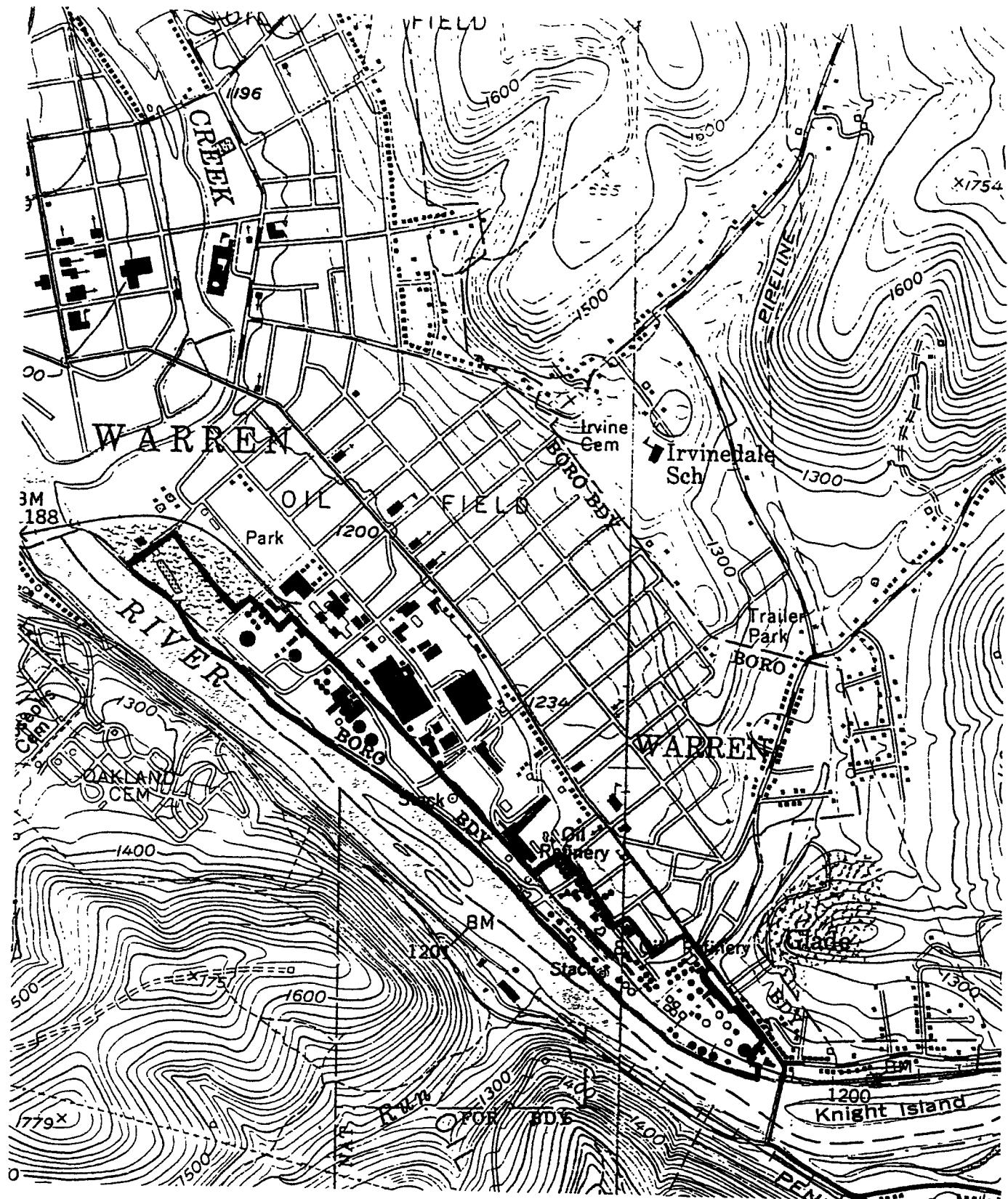
2-10

IFV is the flow vector ($1 = 10^\circ$, $2 = 20^\circ$, etc.)

BH is the building height in meters

BW is the projected building width in meters

WAK indicates whether the upper bound (WAK = 0) or lower bound (WAK = 1) estimate of lateral plume spread is used for super-squat buildings. This model option is not applicable to the refinery structures and does not affect the model results.



(1 km = 6.3 cm)

Figure 2-2. United Refining Company facility boundaries (property line outlines in bold).



Figure 2-3. Locations of Warren North and South monitors. (1 km = 2.9 cm)

3. Modeling Procedures

Because the refinery is located in a valley, both flat terrain and complex terrain models are needed to estimate SO₂ concentrations. The ISCST2 model is commonly used for receptor elevations below stack height. This is an hour-by-hour refined modeling technique and can use the available onsite meteorological data. One year of hourly meteorological data has been collected by United Refining (1 August 1988-31 July 1989) and was used in the ISCST2 modeling.

For receptors above plume height, the SO₂ concentrations were estimated with the RTDM model (Version 3.20) which has previously been used to model the Warren Refinery. At receptors between stack height and plume height, the intermediate terrain policy was followed, which selects the highest predicted concentration of either ISCST2 or RTDM.

The two hills south of the refinery were the site of predicted violations of the SO₂ standards with the previous RTDM modeling. A more refined EPA complex terrain model, CTSCREEN, was proposed in the Protocol for these two hills. The onsite meteorological data is not sufficiently detailed to operate CTDMPLUS, the only EPA-recommended hour-by-hour refined terrain model. CTSCREEN is the screening version of CTDMPLUS, with conservative default meteorological data. No onsite measurements are required for CTSCREEN.

3.1 ISCST2/RTDM

The "intermediate terrain" policy of EPA dictates that every source be run twice, once with a flat-terrain model such as ISCST2 and once with a complex terrain model such as RTDM, for each receptor for each hour. The plume height each hour must also be stored so that the largest predicted concentration for each source from both models can be selected each hour for receptors between stack height and plume height. The same "intermediate terrain" procedure must be followed for the net impact of the refinery at locations where violations are predicted.

Because nearly 20 sources must be individually run with each model, the bookkeeping logistics would be formidable. If an emission rate was changed, the process would need to be repeated. A strategy was devised to minimize the effort of repeating the modeling exercise. The strategy was to model each source once with both RTDM and ISCST2 for all receptors for all hours at nominal unit emission rates. Then, software was developed to process the large binary concentration files from these model runs. This required that each concentration in all files be scaled by the actual emission rate for each source. Intermediate terrain rules were

applied (using the EPA model POSTIT) and the sources merged to create the summed concentrations. This was done for the proposed emissions inventory and the net inventory for each averaging period at each receptor. The new software is also able to identify violations and match-up the already calculated net impact for that receptor and averaging time. The only modifications to ISCST2 and RTDM were to write-out interim results such as plume height for each hour. These values were needed for intermediate terrain calculations. The calculation algorithms were not modified.

3.1.1 Meteorological Data

A 70 m meteorological tower was operated by United Refining at the western end of the refinery. Wind speed, wind direction, and sigma-theta were measured at 30 m and 70 m, and temperature at 30 m. Meteorological data were processed by ENSR for the one year period 1 August 1988 to 31 July 1989 as part of modeling the refinery with RTDM. These data were used for running ISCST2 and RTDM and are described below.

Three separate meteorological files were developed by ENSR for running ISCST2 and RTDM. This was done because RTDM allows observations of wind speeds at different levels of the tower to be used for plume rise and for plume dilution and transport. For stack heights less than 30 meters with low buoyancy flux, the 30 meter-level wind direction and wind speed was used for determining plume transport direction and both plume rise and plume dilution calculations. Stacks of moderate height (between 30 and 50 meters) with high buoyancy flux were modeled using the 30 meter-level wind speeds for plume rise calculations and the 70-meter wind data for plume dilution and plume transport. For the tallest stack (the 69-meter boiler house stack), the 70-meter level was used for all dispersion calculations. The ISCST2 model, which accepts only a single wind speed each hour, used the wind speed and direction at the 30 m tower level.

If the required 30 m wind data were missing, the 70 m data were substituted. If the required 70 m wind data were missing, the 30 m data were substituted. If neither tower level was available, the Bradford, Pennsylvania Airport wind data and temperature were used. Stability class was estimated by the EPA sigma-theta method, corrected for a roughness length of 55 centimeters and an elevation of 30 meters. The EPA method nominally assumes a roughness length of 15 centimeters and a measurement height of 10 meters. Hourly mixing heights were estimated using the RAMMET preprocessor with afternoon Holzworth mixing heights from the Pittsburgh surface and upper air data.

3.1.2 Receptors

As specified in the Protocol (21 October 1992 letter) the polar receptor grid used in the 1989 RTDM simulations by ENSR, except for those receptors on the two hills modeled with CTSCREEN, were used. The ring distances for the polar grid, centered on the Boilerhouse stack, were 300, 400, 500, 600, 800, 1000, 1500, 2000, 3000, and 5000 meters. In addition, 57 receptors along the refinery property line were included in the receptor grid. They were located approximately every 100 m along the property line. Six other receptors were colocated with monitors in Conewango and Pleasant Townships. This is a total of 315 receptors, which are listed in Table 3-1 and plotted in Figure 3-1.

3.2 CTSCREEN

The CTSCREEN complex terrain screening model was used for receptors above stack height on the two hills just south of the refinery. Receptor elevations ranged from 1300 feet to 1847 feet. The proposed EPA Supplement B to the *Guideline on Air Quality Models (Revised)* states that "CTSCREEN may be used to calculate concentrations under all stability conditions at all receptors located on terrain above stack top. For receptors at or below stack top a preferred simple terrain model should be used." No intermediate terrain is needed on the two hills when CTSCREEN is applied.

CTSCREEN does not use observed hourly meteorological conditions, but assumes a matrix of meteorological conditions that are thought to bracket the highest concentrations for most source-terrain configurations. CTSCREEN predicts maximum 1-hour average concentrations at each receptor which are then scaled by the model to predict HSH 3-hour and 24-hour concentrations and the annual average concentration at each receptor.

3.2.1 Topography

Earlier RTDM modeling analyses conducted by ENSR for United Refining had shown that maximum predicted concentrations were confined to two hills just across the river to the southeast and southwest of the refinery. As proposed in the Protocol, CTSCREEN was used to model these two hills. A digitized plot of the two hills is shown in Figure 3-2.

TABLE 3-1
ISC2/RTDM Receptor Locations

| Receptor | X(km) | Y(km) | Elev(ft) | Distance/Flow-Vector |
|----------|---------|---------|----------|----------------------|
| 1 | 0.05209 | 0.29544 | 1220. | 300/ 10 |
| 2 | 0.06946 | 0.39392 | 1220. | 400/ 10 |
| 3 | 0.08682 | 0.49240 | 1220. | 500/ 10 |
| 4 | 0.10419 | 0.59088 | 1240. | 600/ 10 |
| 5 | 0.13892 | 0.78785 | 1300. | 800/ 10 |
| 6 | 0.17365 | 0.98481 | 1360. | 1000/ 10 |
| 7 | 0.26047 | 1.47721 | 1420. | 1500/ 10 |
| 8 | 0.34729 | 1.96962 | 1620. | 2000/ 10 |
| 9 | 0.52094 | 2.95442 | 1800. | 3000/ 10 |
| 10 | 0.86824 | 4.92404 | 2000. | 5000/ 10 |
| 11 | 0.10261 | 0.28191 | 1220. | 300/ 20 |
| 12 | 0.13681 | 0.37588 | 1240. | 400/ 20 |
| 13 | 0.17101 | 0.46985 | 1240. | 500/ 20 |
| 14 | 0.20521 | 0.56382 | 1280. | 600/ 20 |
| 15 | 0.27361 | 0.75175 | 1320. | 800/ 20 |
| 16 | 0.34202 | 0.93969 | 1360. | 1000/ 20 |
| 17 | 0.51303 | 1.40954 | 1400. | 1500/ 20 |
| 18 | 0.68404 | 1.87939 | 1720. | 2000/ 20 |
| 19 | 1.02606 | 2.81908 | 1878. | 3000/ 20 |
| 20 | 1.71009 | 4.69847 | 1975. | 5000/ 20 |
| 21 | 0.15000 | 0.25981 | 1220. | 300/ 30 |
| 22 | 0.20000 | 0.34641 | 1240. | 400/ 30 |
| 23 | 0.25000 | 0.43301 | 1240. | 500/ 30 |
| 24 | 0.30000 | 0.51962 | 1280. | 600/ 30 |
| 25 | 0.40000 | 0.69282 | 1280. | 800/ 30 |
| 26 | 0.50000 | 0.86603 | 1260. | 1000/ 30 |
| 27 | 0.75000 | 1.29904 | 1360. | 1500/ 30 |
| 28 | 1.00000 | 1.73205 | 1700. | 2000/ 30 |
| 29 | 1.50000 | 2.59808 | 1860. | 3000/ 30 |
| 30 | 2.50000 | 4.33013 | 1960. | 5000/ 30 |
| 31 | 0.19284 | 0.22981 | 1220. | 300/ 40 |
| 32 | 0.25711 | 0.30642 | 1240. | 400/ 40 |
| 33 | 0.32139 | 0.38302 | 1240. | 500/ 40 |
| 34 | 0.38567 | 0.45963 | 1260. | 600/ 40 |
| 35 | 0.51423 | 0.61284 | 1220. | 800/ 40 |
| 36 | 0.64278 | 0.76605 | 1240. | 1000/ 40 |
| 37 | 0.96418 | 1.14907 | 1380. | 1500/ 40 |
| 38 | 1.28557 | 1.53209 | 1520. | 2000/ 40 |
| 39 | 1.92835 | 2.29814 | 1660. | 3000/ 40 |
| 40 | 3.21392 | 3.83023 | 1918. | 5000/ 40 |
| 41 | 0.22981 | 0.19284 | 1220. | 300/ 50 |
| 42 | 0.30642 | 0.25712 | 1220. | 400/ 50 |
| 43 | 0.38302 | 0.32140 | 1220. | 500/ 50 |
| 44 | 0.45962 | 0.38567 | 1200. | 600/ 50 |
| 45 | 0.61283 | 0.51423 | 1220. | 800/ 50 |
| 46 | 0.76604 | 0.64279 | 1300. | 1000/ 50 |
| 47 | 1.14906 | 0.96419 | 1560. | 1500/ 50 |
| 48 | 1.53208 | 1.28558 | 1600. | 2000/ 50 |
| 49 | 2.29812 | 1.92837 | 1844. | 3000/ 50 |
| 50 | 3.83021 | 3.21396 | 1931. | 5000/ 50 |
| 51 | 0.25981 | 0.15000 | 1220. | 300/ 60 |
| 52 | 0.34641 | 0.20000 | 1200. | 400/ 60 |
| 53 | 0.43301 | 0.25000 | 1200. | 500/ 60 |
| 54 | 0.51961 | 0.30000 | 1240. | 600/ 60 |
| 55 | 0.69282 | 0.40000 | 1240. | 800/ 60 |
| 56 | 0.86602 | 0.50000 | 1340. | 1000/ 60 |
| 57 | 1.29903 | 0.75000 | 1620. | 1500/ 60 |
| 58 | 1.73205 | 1.00000 | 1860. | 2000/ 60 |
| 59 | 2.59807 | 1.50000 | 1900. | 3000/ 60 |
| 60 | 4.33011 | 2.50000 | 1880. | 5000/ 60 |
| 61 | 0.28191 | 0.10261 | 1200. | 300/ 70 |
| 62 | 0.37588 | 0.13681 | 1220. | 400/ 70 |
| 63 | 0.46985 | 0.17101 | 1260. | 500/ 70 |
| 64 | 0.56381 | 0.20522 | 1320. | 600/ 70 |
| 65 | 0.75175 | 0.27362 | 1340. | 800/ 70 |
| 66 | 0.93969 | 0.34203 | 1380. | 1000/ 70 |
| 67 | 1.40954 | 0.51304 | 1640. | 1500/ 70 |
| 68 | 1.87938 | 0.68405 | 1916. | 2000/ 70 |
| 69 | 2.81907 | 1.02608 | 1913. | 3000/ 70 |
| 70 | 4.69845 | 1.71013 | 1800. | 5000/ 70 |
| 71 | 0.39392 | 0.06946 | 1220. | 400/ 80 |
| 72 | 0.49240 | 0.08683 | 1260. | 500/ 80 |
| 73 | 0.59088 | 0.10419 | 1360. | 600/ 80 |
| 74 | 0.78785 | 0.13892 | 1360. | 800/ 80 |
| 75 | 0.98481 | 0.17366 | 1400. | 1000/ 80 |
| 76 | 1.47721 | 0.26048 | 1620. | 1500/ 80 |
| 77 | 1.96961 | 0.34731 | 1820. | 2000/ 80 |
| 78 | 2.95442 | 0.52097 | 1660. | 3000/ 80 |
| 79 | 4.92403 | 0.86828 | 1900. | 5000/ 80 |
| 80 | 0.40000 | 0.00000 | 1220. | 400/ 90 |
| 81 | 0.50000 | 0.00000 | 1240. | 500/ 90 |
| 82 | 0.60000 | 0.00000 | 1280. | 600/ 90 |
| 83 | 0.80000 | 0.00000 | 1300. | 800/ 90 |
| 84 | 1.00000 | 0.00000 | 1400. | 1000/ 90 |
| 85 | 1.50000 | 0.00000 | 1620. | 1500/ 90 |
| 86 | 2.00000 | 0.00000 | 1640. | 2000/ 90 |
| 87 | 3.00000 | 0.00000 | 1800. | 3000/ 90 |
| 88 | 5.00000 | 0.00000 | 2003. | 5000/ 90 |

Table 5-1 - Continued
ISC2/RTDM Receptor Locations

| | | | | |
|-----|----------|----------|-------|----------|
| 89 | 0.49240 | -0.08682 | 1220. | 500/100 |
| 90 | 0.59089 | -0.10418 | 1260. | 600/100 |
| 91 | 0.78785 | -0.13891 | 1260. | 800/100 |
| 92 | 0.98481 | -0.17364 | 1280. | 1000/100 |
| 93 | 1.47721 | -0.26046 | 1320. | 1500/100 |
| 94 | 1.96962 | -0.34728 | 1360. | 2000/100 |
| 95 | 2.95443 | -0.52092 | 1840. | 3000/100 |
| 96 | 4.92405 | -0.86820 | 1940. | 5000/100 |
| 97 | 0.56382 | -0.20521 | 1200. | 600/110 |
| 98 | 0.75176 | -0.27361 | 1200. | 800/110 |
| 99 | 0.93970 | -0.34201 | 1200. | 1000/110 |
| 100 | 1.40954 | -0.51302 | 1200. | 1500/110 |
| 101 | 1.87939 | -0.68402 | 1380. | 2000/110 |
| 102 | 2.81909 | -1.02603 | 1600. | 3000/110 |
| 103 | 4.69848 | -1.71005 | 1940. | 5000/110 |
| 104 | 0.51962 | -0.30000 | 1180. | 600/120 |
| 105 | 0.69282 | -0.40000 | 1180. | 800/120 |
| 106 | 0.86603 | -0.50000 | 1200. | 1000/120 |
| 107 | 1.29905 | -0.75000 | 1240. | 1500/120 |
| 108 | 1.73206 | -1.00000 | 1360. | 2000/120 |
| 109 | 2.59809 | -1.50000 | 1670. | 3000/120 |
| 110 | 4.33015 | -2.50000 | 1865. | 5000/120 |
| 111 | 0.30642 | -0.25711 | 1180. | 400/130 |
| 112 | 0.38303 | -0.32139 | 1180. | 500/130 |
| 113 | 0.45963 | -0.38567 | 1200. | 600/130 |
| 114 | 0.61284 | -0.51422 | 1280. | 800/130 |
| 115 | 0.76605 | -0.64278 | 1400. | 1000/130 |
| 116 | 1.14908 | -0.96417 | 1420. | 1500/130 |
| 117 | 1.53210 | -1.28556 | 1500. | 2000/130 |
| 118 | 2.29816 | -1.92833 | 1460. | 3000/130 |
| 119 | 3.83026 | -3.21389 | 1860. | 5000/130 |
| 120 | 0.19284 | -0.22981 | 1180. | 300/140 |
| 121 | 0.25712 | -0.30641 | 1200. | 400/140 |
| 122 | 0.32140 | -0.38302 | 1240. | 500/140 |
| 123 | 0.38568 | -0.45962 | 1300. | 600/140 |
| 124 | 0.96420 | -1.14905 | 1350. | 1500/140 |
| 125 | 1.28560 | -1.53207 | 1640. | 2000/140 |
| 126 | 1.92839 | -2.29811 | 1760. | 3000/140 |
| 127 | 3.21399 | -3.83018 | 1842. | 5000/140 |
| 128 | 0.15000 | -0.25981 | 1200. | 300/150 |
| 129 | 0.20000 | -0.34641 | 1280. | 400/150 |
| 130 | 0.25000 | -0.43301 | 1300. | 500/150 |
| 131 | 0.75000 | -1.29903 | 1380. | 1500/150 |
| 132 | 1.00000 | -1.73204 | 1720. | 2000/150 |
| 133 | 1.50000 | -2.59806 | 1781. | 3000/150 |
| 134 | 2.50000 | -4.33009 | 1801. | 5000/150 |
| 135 | 0.10261 | -0.28191 | 1280. | 300/160 |
| 136 | 0.13681 | -0.37588 | 1300. | 400/160 |
| 137 | 0.51305 | -1.40953 | 1460. | 1500/160 |
| 138 | 0.68407 | -1.87938 | 1774. | 2000/160 |
| 139 | 1.02610 | -2.81906 | 1760. | 3000/160 |
| 140 | 1.71017 | -4.69844 | 1720. | 5000/160 |
| 141 | 0.05210 | -0.29544 | 1300. | 300/170 |
| 142 | 0.34733 | -1.96961 | 1740. | 2000/170 |
| 143 | 0.52099 | -2.95442 | 1870. | 3000/170 |
| 144 | 0.86832 | -4.92403 | 1860. | 5000/170 |
| 145 | 0.00000 | -3.00000 | 1865. | 3000/180 |
| 146 | 0.00000 | -5.00000 | 1943. | 5000/180 |
| 147 | -0.52089 | -2.95443 | 1880. | 3000/190 |
| 148 | -0.86815 | -4.92405 | 1920. | 5000/190 |
| 149 | -1.02601 | -2.81910 | 1881. | 3000/200 |
| 150 | -1.71001 | -4.69849 | 1940. | 5000/200 |
| 151 | -1.00000 | -1.73207 | 1700. | 2000/210 |
| 152 | -1.50000 | -2.59811 | 1840. | 3000/210 |
| 153 | -2.50000 | -4.33018 | 1964. | 5000/210 |
| 154 | -1.28554 | -1.53212 | 1860. | 2000/220 |
| 155 | -1.92832 | -2.29817 | 1880. | 3000/220 |
| 156 | -3.21386 | -3.83029 | 1930. | 5000/220 |
| 157 | -0.22981 | -0.19284 | 1260. | 300/230 |
| 158 | -0.30641 | -0.25712 | 1240. | 400/230 |
| 159 | -0.38302 | -0.32140 | 1260. | 500/230 |
| 160 | -0.45962 | -0.38568 | 1300. | 600/230 |
| 161 | -0.61282 | -0.51424 | 1300. | 800/230 |
| 162 | -1.53206 | -1.28561 | 1860. | 2000/230 |
| 163 | -2.29809 | -1.92841 | 1940. | 3000/230 |
| 164 | -3.83015 | -3.21402 | 1940. | 5000/230 |
| 165 | -0.25980 | -0.15000 | 1200. | 300/240 |
| 166 | -0.34641 | -0.20000 | 1280. | 400/240 |
| 167 | -1.73203 | -1.00000 | 1760. | 2000/240 |
| 168 | -2.59804 | -1.50000 | 1920. | 3000/240 |
| 169 | -4.33007 | -2.50000 | 1920. | 5000/240 |
| 170 | -0.28191 | -0.10261 | 1200. | 300/250 |
| 171 | -0.37587 | -0.13682 | 1300. | 400/250 |
| 172 | -2.81905 | -1.02613 | 1880. | 3000/250 |
| 173 | -4.69842 | -1.71021 | 1860. | 5000/250 |
| 174 | -0.29544 | -0.05210 | 1200. | 300/260 |
| 175 | -0.39392 | -0.06947 | 1300. | 400/260 |
| 176 | -2.95441 | -0.52102 | 1800. | 3000/260 |
| 177 | -4.92402 | -0.86836 | 1850. | 5000/260 |
| 178 | -0.30000 | 0.00000 | 1200. | 300/270 |

Table 3-1 - Continued
ISC2/RTDM Receptor Locations

| | | | | |
|-----|----------|----------|-------|-------------|
| 179 | -0.40000 | 0.00000 | 1300. | 400/270 |
| 180 | -2.00000 | 0.00000 | 1300. | 2000/270 |
| 181 | -3.00000 | 0.00000 | 1560. | 3000/270 |
| 182 | -5.00000 | 0.00000 | 1798. | 5000/270 |
| 183 | -0.29544 | 0.05209 | 1180. | 300/280 |
| 184 | -0.39392 | 0.06945 | 1240. | 400/280 |
| 185 | -0.49241 | 0.08681 | 1300. | 500/280 |
| 186 | -1.96962 | 0.34724 | 1300. | 2000/280 |
| 187 | -2.95444 | 0.52087 | 1200. | 3000/280 |
| 188 | -4.92406 | 0.86811 | 1360. | 5000/280 |
| 189 | -0.28191 | 0.10260 | 1180. | 300/290 |
| 190 | -0.37588 | 0.13680 | 1180. | 400/290 |
| 191 | -0.46985 | 0.17100 | 1220. | 500/290 |
| 192 | -0.56382 | 0.20520 | 1300. | 600/290 |
| 193 | -1.87940 | 0.68399 | 1300. | 2000/290 |
| 194 | -2.81911 | 1.02598 | 1360. | 3000/290 |
| 195 | -4.69851 | 1.70997 | 1814. | 5000/290 |
| 196 | -0.25981 | 0.15000 | 1180. | 300/300 |
| 197 | -0.34642 | 0.20000 | 1180. | 400/300 |
| 198 | -0.43302 | 0.25000 | 1180. | 500/300 |
| 199 | -0.51962 | 0.30000 | 1180. | 600/300 |
| 200 | -0.69283 | 0.40000 | 1260. | 800/300 |
| 201 | -0.86604 | 0.50000 | 1300. | 1000/300 |
| 202 | -1.29906 | 0.75000 | 1300. | 1500/300 |
| 203 | -1.73208 | 1.00000 | 1300. | 2000/300 |
| 204 | -2.59812 | 1.50000 | 1660. | 3000/300 |
| 205 | -4.33020 | 2.50000 | 1820. | 5000/300 |
| 206 | -1.53213 | 1.28553 | 1180. | 2000/310 |
| 207 | -2.29819 | 1.92830 | 1640. | 3000/310 |
| 208 | -3.83031 | 3.21383 | 1880. | 5000/310 |
| 209 | -1.28562 | 1.53205 | 1200. | 2000/320 |
| 210 | -1.92843 | 2.29808 | 1660. | 3000/320 |
| 211 | -3.21405 | 3.83013 | 1903. | 5000/320 |
| 212 | -0.75000 | 1.29902 | 1200. | 1500/330 |
| 213 | -1.00000 | 1.73202 | 1200. | 2000/330 |
| 214 | -1.50000 | 2.59803 | 1660. | 3000/330 |
| 215 | -2.50000 | 4.33005 | 1680. | 5000/330 |
| 216 | -0.27364 | 0.75175 | 1234. | 800/340 |
| 217 | -0.34205 | 0.93968 | 1220. | 1000/340 |
| 218 | -0.51307 | 1.40952 | 1240. | 1500/340 |
| 219 | -0.68410 | 1.87936 | 1300. | 2000/340 |
| 220 | -1.02615 | 2.81905 | 1420. | 3000/340 |
| 221 | -1.71025 | 4.69841 | 1460. | 5000/340 |
| 222 | -0.05210 | 0.29544 | 1200. | 300/350 |
| 223 | -0.06947 | 0.39392 | 1220. | 400/350 |
| 224 | -0.08684 | 0.49240 | 1220. | 500/350 |
| 225 | -0.10421 | 0.59088 | 1220. | 600/350 |
| 226 | -0.13894 | 0.78784 | 1220. | 800/350 |
| 227 | -0.17368 | 0.98480 | 1240. | 1000/350 |
| 228 | -0.26052 | 1.47720 | 1380. | 1500/350 |
| 229 | -0.34736 | 1.96960 | 1580. | 2000/350 |
| 230 | -0.52104 | 2.95441 | 1757. | 3000/350 |
| 231 | -0.86840 | 4.92401 | 1820. | 5000/350 |
| 232 | 0.00000 | 0.30000 | 1220. | 300/360 |
| 233 | 0.00000 | 0.40000 | 1220. | 400/360 |
| 234 | 0.00000 | 0.50000 | 1220. | 500/360 |
| 235 | 0.00000 | 0.60000 | 1220. | 600/360 |
| 236 | 0.00000 | 0.80000 | 1240. | 800/360 |
| 237 | 0.00000 | 1.00000 | 1300. | 1000/360 |
| 238 | 0.00000 | 1.50000 | 1400. | 1500/360 |
| 239 | 0.00000 | 2.00000 | 1665. | 2000/360 |
| 240 | 0.00000 | 3.00000 | 1829. | 3000/360 |
| 241 | 0.00000 | 5.00000 | 1931. | 5000/360 |
| 242 | -3.40000 | -2.05000 | 1890. | Pleasant |
| 243 | -3.91000 | 1.64000 | 1600. | Overlook |
| 244 | -3.81000 | 2.59000 | 1710. | StoneHill |
| 245 | -4.08000 | 3.19000 | 1520. | Roadway |
| 246 | -4.75000 | 3.35000 | 1790. | Liberty |
| 247 | -5.51000 | 2.36000 | 1760. | Preston |
| 248 | -0.00985 | -0.01009 | 1180. | 14.1/224.3 |
| 249 | 0.07410 | -0.08143 | 1180. | 110.1/137.7 |
| 250 | 0.19572 | -0.16657 | 1180. | 257.0/130.4 |
| 251 | 0.29052 | -0.21107 | 1180. | 359.1/126.0 |
| 252 | 0.38290 | -0.25056 | 1180. | 457.6/123.2 |
| 253 | 0.48901 | -0.27554 | 1180. | 561.3/119.4 |
| 254 | 0.49710 | -0.24568 | 1185. | 554.5/116.3 |
| 255 | 0.44331 | -0.22490 | 1185. | 497.1/116.9 |
| 256 | 0.49181 | -0.17223 | 1190. | 521.1/109.3 |
| 257 | 0.44331 | -0.09747 | 1195. | 453.9/102.4 |
| 258 | 0.36237 | -0.03107 | 1195. | 363.7/ 94.9 |
| 259 | 0.30939 | 0.06126 | 1190. | 315.4/ 78.8 |
| 260 | 0.23746 | 0.14609 | 1210. | 278.8/ 58.4 |
| 261 | 0.15102 | 0.07268 | 1205. | 167.6/ 64.3 |
| 262 | 0.09314 | 0.15379 | 1210. | 179.8/ 31.2 |
| 263 | 0.06721 | 0.18465 | 1210. | 196.5/ 20.0 |
| 264 | 0.02104 | 0.14781 | 1200. | 149.3/ 8.1 |
| 265 | -0.01507 | 0.19141 | 1200. | 192.0/355.5 |
| 266 | -0.06041 | 0.25556 | 1200. | 262.6/346.7 |
| 267 | -0.12398 | 0.34064 | 1200. | 362.5/340.0 |
| 268 | -0.20760 | 0.28365 | 1190. | 351.5/323.8 |

Table 3-1 - Concluded
ISC2/RTDM Receptor Locations

| | | | | |
|-----|----------|---------|-------|--------------|
| 269 | -0.25794 | 0.33134 | 1190. | 419.9/322.1 |
| 270 | -0.33647 | 0.40962 | 1190. | 530.1/320.6 |
| 271 | -0.41226 | 0.48783 | 1190. | 638.7/319.8 |
| 272 | -0.48893 | 0.55653 | 1190. | 740.8/318.7 |
| 273 | -0.55445 | 0.62448 | 1190. | 835.1/318.4 |
| 274 | -0.63533 | 0.69821 | 1190. | 944.0/317.7 |
| 275 | -0.72250 | 0.77207 | 1190. | 1057.4/316.9 |
| 276 | -0.79663 | 0.85129 | 1190. | 1165.9/316.9 |
| 277 | -0.87146 | 0.91832 | 1190. | 1266.0/316.5 |
| 278 | -0.94258 | 0.98979 | 1190. | 1366.8/316.4 |
| 279 | -0.99311 | 0.94242 | 1190. | 1369.1/313.5 |
| 280 | -1.02134 | 0.97601 | 1190. | 1412.7/313.7 |
| 281 | -1.07566 | 1.04602 | 1190. | 1500.4/314.2 |
| 282 | -1.11090 | 1.02510 | 1190. | 1511.6/312.7 |
| 283 | -1.17288 | 1.09372 | 1190. | 1603.7/313.0 |
| 284 | -1.24472 | 1.16886 | 1190. | 1707.5/313.2 |
| 285 | -1.31131 | 1.23570 | 1190. | 1801.8/313.3 |
| 286 | -1.37599 | 1.19612 | 1185. | 1823.2/311.0 |
| 287 | -1.44837 | 1.12751 | 1180. | 1835.5/307.9 |
| 288 | -1.40252 | 1.09182 | 1180. | 1777.4/307.9 |
| 289 | -1.31576 | 1.03912 | 1180. | 1676.6/308.3 |
| 290 | -1.24374 | 0.95435 | 1180. | 1567.7/307.5 |
| 291 | -1.15461 | 0.88916 | 1180. | 1457.3/307.6 |
| 292 | -1.07095 | 0.81880 | 1180. | 1348.1/307.4 |
| 293 | -0.99833 | 0.74956 | 1180. | 1248.4/306.9 |
| 294 | -0.90606 | 0.68524 | 1180. | 1136.0/307.1 |
| 295 | -0.81923 | 0.63775 | 1180. | 1038.2/307.9 |
| 296 | -0.72916 | 0.57999 | 1180. | 931.7/308.5 |
| 297 | -0.64542 | 0.52265 | 1180. | 830.5/309.0 |
| 298 | -0.55539 | 0.47267 | 1180. | 729.3/310.4 |
| 299 | -0.46999 | 0.41289 | 1180. | 625.6/311.3 |
| 300 | -0.39073 | 0.34327 | 1180. | 520.1/311.3 |
| 301 | -0.30921 | 0.26879 | 1180. | 409.7/311.0 |
| 302 | -0.22949 | 0.19739 | 1180. | 302.7/310.7 |
| 303 | -0.15265 | 0.12673 | 1180. | 198.4/309.7 |
| 304 | -0.08226 | 0.05363 | 1180. | 98.2/303.1 |
| 305 | -0.51423 | 0.61283 | 1190. | 800.0/320.0 |
| 306 | -0.64279 | 0.76604 | 1190. | 1000.0/320.0 |
| 307 | -0.96419 | 1.14906 | 1190. | 1500.0/320.0 |
| 308 | -0.20000 | 0.34641 | 1190. | 400.0/330.0 |
| 309 | -0.25000 | 0.43301 | 1190. | 500.0/330.0 |
| 310 | -0.30000 | 0.51961 | 1190. | 600.0/330.0 |
| 311 | -0.40000 | 0.69282 | 1190. | 800.0/330.0 |
| 312 | -0.50000 | 0.86602 | 1200. | 1000.0/330.0 |
| 313 | -0.13681 | 0.37588 | 1200. | 400.0/340.0 |
| 314 | -0.17101 | 0.46985 | 1200. | 500.0/340.0 |
| 315 | -0.20521 | 0.56381 | 1220. | 600.0/340.0 |

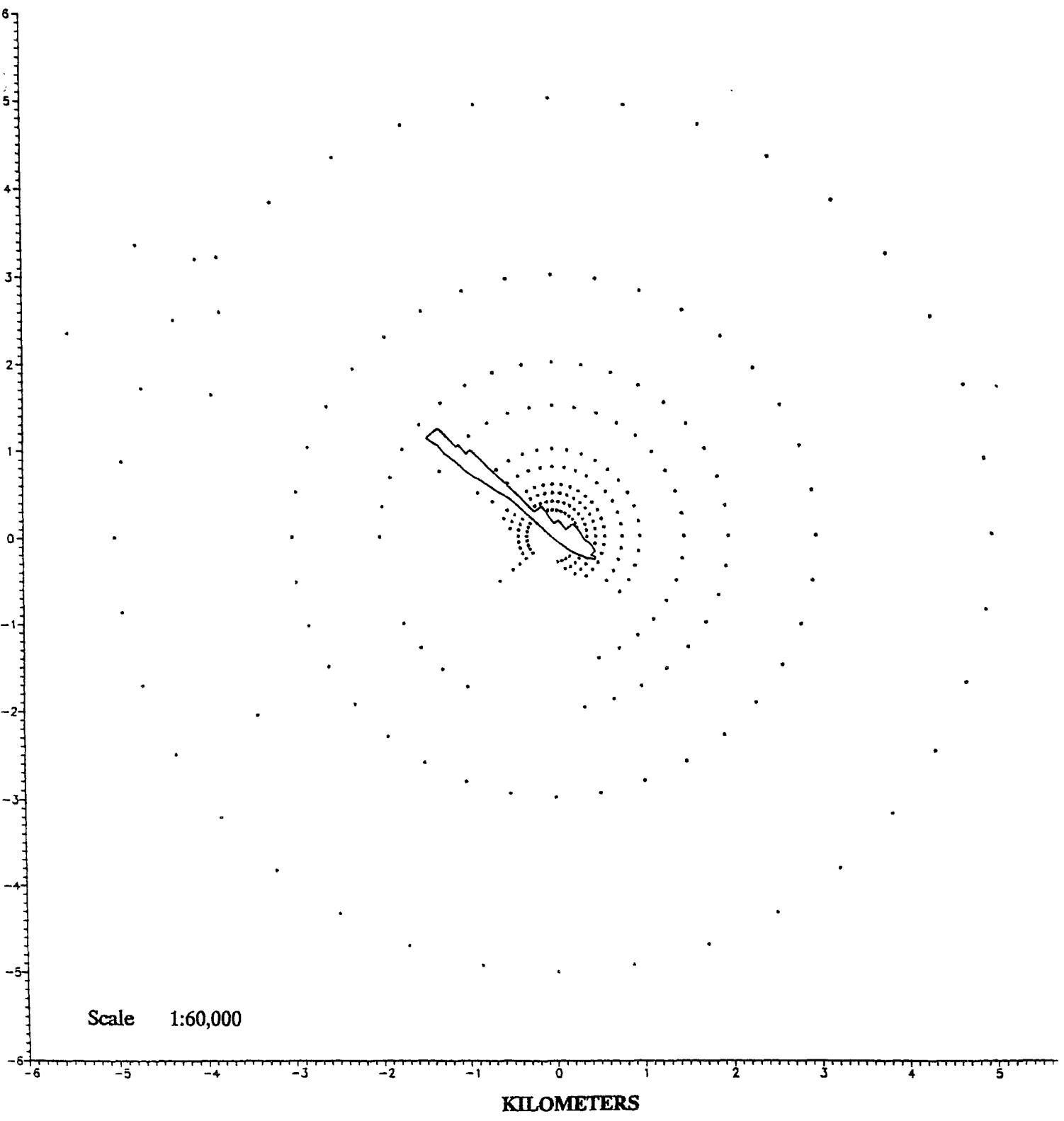
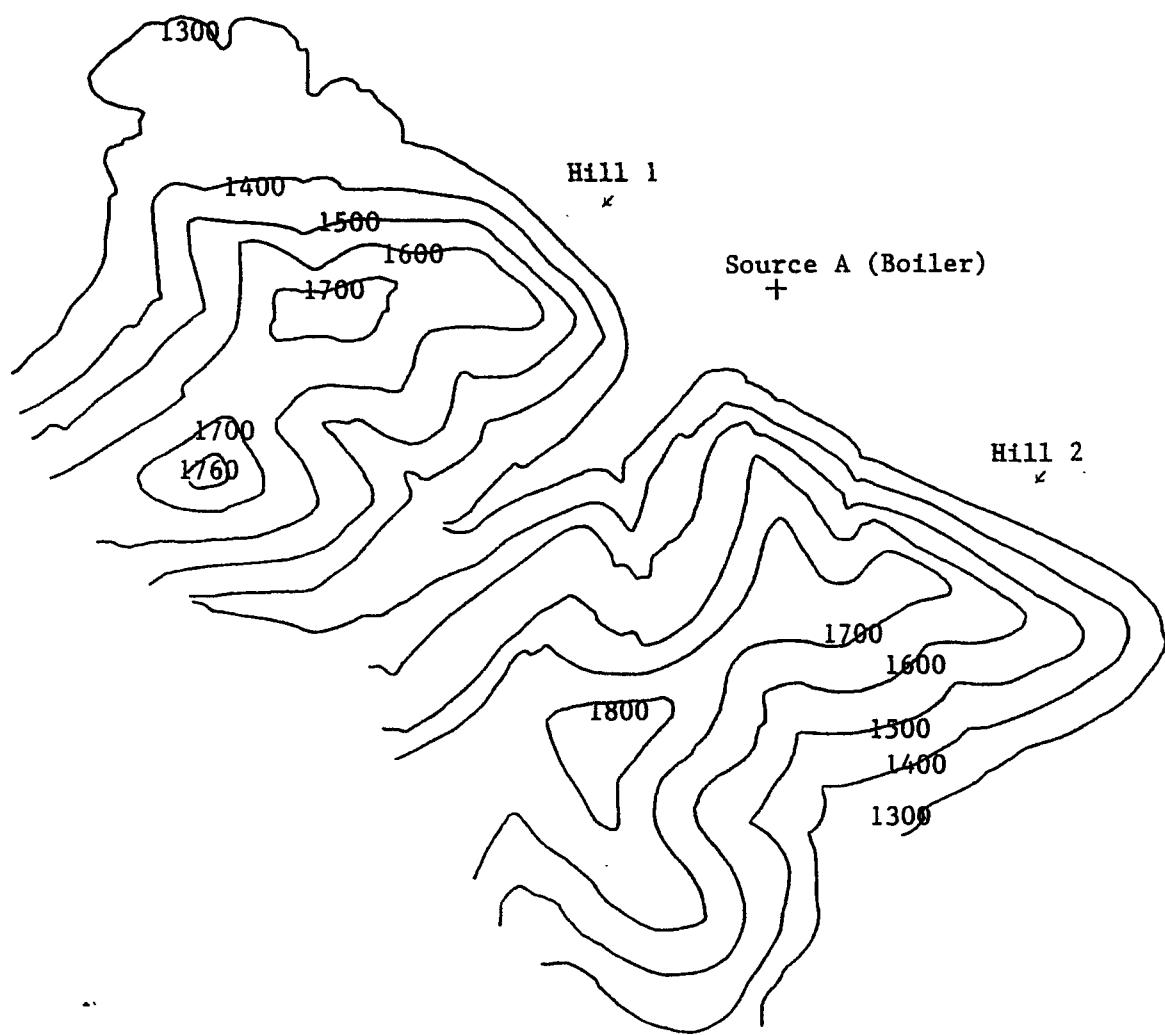


Figure 3-1. Plot of 315 receptor locations. Solid line connects the 57 property-line receptors.



Scale 1:24,000

Figure 3-2. Digitized hill contours (elevations in feet).

3.2.2 Receptors

The CTSCREEN receptor generator was used to select receptors every 500 meters along the hill contour elevations. Receptors were placed at the hill tops of both hills. The hill located to the southwest and west of the boiler house includes contour elevations of 1300 to 1700 feet (every 100 ft) plus a 1760 foot contour with a hill top elevation of 1779 feet. The second hill encompasses contours ranging from 1300 to 1800 feet (every 100 feet) with a hill top elevation of 1847 feet. The 124 CTSCREEN receptors are listed in Table 3-2. A dense network of additional local receptors were included for the events with the highest predicted concentrations (so-called "hot-spot" modeling), as requested in the DER letter attached in Appendix A.

Following the Protocol, CTSCREEN assumed wind directions from 110° to 320° at intervals of 10°. In addition, line-up directions from the major sources to the hill tops were assumed. The additional wind directions modeled were 15°, 25°, 35°, and 75°. For the "hot-spot" modeling with a dense receptor grid, wind direction increments of 1° were used over the sector covering the hot-spot grid. No other meteorological assumptions are required by CTSCREEN.

Separate CTSCREEN runs were made for the stable/neutral stability case and the unstable stability case. The two hills were modeled separately for the unstable case, but in a single run for the stable/neutral case. This resulted in a total of three initial CTSCREEN runs. The hot-spot modeling with the dense local grid was conducted around the receptor with the highest predicted concentration for each hill for each stability class case for a total of four additional CTSCREEN runs.

Table 3-2
CTSCREEN Receptors (X,Y relative to boiler house stack)

| Rec # | X(m) | Y(m) | EL.(ft) | Hill | Rec # | X(m) | Y(m) | EL.(ft) | Hill |
|-------|----------|---------|---------|------|-------|----------|----------|---------|------|
| 1 | -2620.00 | -312.00 | 1300.0 | 1 | 51 | -1579.18 | -359.20 | 1700.0 | 1 |
| 2 | -2129.72 | -215.58 | 1300.0 | 1 | 52 | -1450.51 | -553.95 | 1700.0 | 1 |
| 3 | -1872.12 | 190.58 | 1300.0 | 1 | 53 | -1632.00 | -480.00 | 1760.0 | 1 |
| 4 | -1872.98 | 518.00 | 1300.0 | 1 | 54 | -1587.00 | -457.00 | 1779.0 | 1 |
| 5 | -1578.85 | 717.14 | 1300.0 | 1 | 55 | -1514.00 | -769.00 | 1300.0 | 2 |
| 6 | -1308.98 | 560.20 | 1300.0 | 1 | 56 | -1024.38 | -667.67 | 1300.0 | 2 |
| 7 | -950.30 | 387.35 | 1300.0 | 1 | 57 | -570.12 | -505.87 | 1300.0 | 2 |
| 8 | -557.03 | 85.74 | 1300.0 | 1 | 58 | -231.17 | -257.97 | 1300.0 | 2 |
| 9 | -532.24 | -332.72 | 1300.0 | 1 | 59 | 191.53 | -400.77 | 1300.0 | 2 |
| 10 | -906.75 | -630.00 | 1300.0 | 1 | 60 | 623.97 | -622.51 | 1300.0 | 2 |
| 11 | -1284.19 | -952.79 | 1300.0 | 1 | 61 | 1049.89 | -874.76 | 1300.0 | 2 |
| 12 | -2404.00 | -410.00 | 1400.0 | 1 | 62 | 796.57 | -1226.70 | 1300.0 | 2 |
| 13 | -1943.36 | -227.19 | 1400.0 | 1 | 63 | 384.75 | -1474.25 | 1300.0 | 2 |
| 14 | -1742.64 | 167.00 | 1400.0 | 1 | 64 | 122.19 | -1890.47 | 1300.0 | 2 |
| 15 | -1353.25 | 310.00 | 1400.0 | 1 | 65 | -124.22 | -2325.54 | 1300.0 | 2 |
| 16 | -870.15 | 251.39 | 1400.0 | 1 | 66 | -370.62 | -2760.61 | 1300.0 | 2 |
| 17 | -510.74 | -77.44 | 1400.0 | 1 | 67 | -607.02 | -3049.52 | 1300.0 | 2 |
| 18 | -829.22 | -384.67 | 1400.0 | 1 | 68 | -791.79 | -2584.92 | 1300.0 | 2 |
| 19 | -1134.47 | -672.02 | 1400.0 | 1 | 69 | -976.57 | -2120.32 | 1300.0 | 2 |
| 20 | -2265.00 | -457.00 | 1500.0 | 1 | 70 | -1161.35 | -1655.71 | 1300.0 | 2 |
| 21 | -1989.54 | -370.00 | 1500.0 | 1 | 71 | -1317.00 | -930.00 | 1400.0 | 2 |
| 22 | -1756.43 | -188.12 | 1500.0 | 1 | 72 | -861.57 | -751.69 | 1400.0 | 2 |
| 23 | -1621.68 | 37.88 | 1500.0 | 1 | 73 | -429.85 | -638.18 | 1400.0 | 2 |
| 24 | -1502.97 | 190.00 | 1500.0 | 1 | 74 | -158.60 | -324.48 | 1400.0 | 2 |
| 25 | -1213.83 | 192.96 | 1500.0 | 1 | 75 | 258.45 | -530.82 | 1400.0 | 2 |
| 26 | -915.30 | 190.00 | 1500.0 | 1 | 76 | 711.48 | -737.12 | 1400.0 | 2 |
| 27 | -671.08 | 38.50 | 1500.0 | 1 | 77 | 894.58 | -1058.15 | 1400.0 | 2 |
| 28 | -654.46 | -182.34 | 1500.0 | 1 | 78 | 447.93 | -1263.59 | 1400.0 | 2 |
| 29 | -907.32 | -271.59 | 1500.0 | 1 | 79 | 84.60 | -1494.44 | 1400.0 | 2 |
| 30 | -1114.35 | -390.22 | 1500.0 | 1 | 80 | -45.15 | -1940.31 | 1400.0 | 2 |
| 31 | -1195.54 | -451.83 | 1500.0 | 1 | 81 | -393.52 | -2270.85 | 1400.0 | 2 |
| 32 | -1249.91 | -683.57 | 1500.0 | 1 | 82 | -713.15 | -2267.79 | 1400.0 | 2 |
| 33 | -1539.85 | -747.97 | 1500.0 | 1 | 83 | -918.85 | -1812.07 | 1400.0 | 2 |
| 34 | -2032.00 | -510.00 | 1600.0 | 1 | 84 | -1226.00 | -1034.00 | 1500.0 | 2 |
| 35 | -1774.70 | -357.77 | 1600.0 | 1 | 85 | -830.02 | -821.35 | 1500.0 | 2 |
| 36 | -1561.71 | -165.71 | 1600.0 | 1 | 86 | -440.75 | -750.00 | 1500.0 | 2 |
| 37 | -1501.23 | 116.79 | 1600.0 | 1 | 87 | -191.46 | -455.14 | 1500.0 | 2 |
| 38 | -1251.28 | 82.38 | 1600.0 | 1 | 88 | 187.56 | -563.71 | 1500.0 | 2 |
| 39 | -967.15 | 107.52 | 1600.0 | 1 | 89 | 607.10 | -767.84 | 1500.0 | 2 |
| 40 | -706.60 | 5.85 | 1600.0 | 1 | 90 | 717.56 | -1045.45 | 1500.0 | 2 |
| 41 | -845.95 | -100.00 | 1600.0 | 1 | 91 | 263.72 | -1203.10 | 1500.0 | 2 |
| 42 | -1049.44 | -260.40 | 1600.0 | 1 | 92 | -74.25 | -1456.14 | 1500.0 | 2 |
| 43 | -1336.25 | -282.92 | 1600.0 | 1 | 93 | -86.22 | -1885.80 | 1500.0 | 2 |
| 44 | -1302.52 | -524.96 | 1600.0 | 1 | 94 | -489.11 | -1923.43 | 1500.0 | 2 |
| 45 | -1503.29 | -670.00 | 1600.0 | 1 | 95 | -833.80 | -1605.64 | 1500.0 | 2 |
| 46 | -1801.46 | -689.89 | 1600.0 | 1 | 96 | -1056.00 | -1200.00 | 1600.0 | 2 |
| 47 | -1397.00 | 0.00 | 1700.0 | 1 | 97 | -824.53 | -1020.67 | 1600.0 | 2 |
| 48 | -1111.02 | 30.00 | 1700.0 | 1 | 98 | -594.50 | -835.31 | 1600.0 | 2 |
| 49 | -1218.90 | -140.00 | 1700.0 | 1 | 99 | -362.05 | -970.00 | 1600.0 | 2 |
| 50 | -1408.33 | -33.43 | 1700.0 | 1 | 100 | -154.77 | -768.38 | 1600.0 | 2 |

Table 3-2 - Concluded
CTSCREEN Receptors (X,Y relative to boiler house stack)

| Rec # | X(m) | Y(m) | EL. (ft) | Hill | Rec # | X(m) | Y(m) | EL. (ft) | Hill |
|-------|---------|----------|----------|------|-------|---------|----------|----------|------|
| 101 | -69.45 | -482.01 | 1600.0 | 2 | 113 | -886.25 | -1455.79 | 1600.0 | 2 |
| 102 | 135.19 | -644.22 | 1600.0 | 2 | 114 | -889.00 | -1160.00 | 1700.0 | 2 |
| 103 | 373.71 | -695.82 | 1600.0 | 2 | 115 | -498.33 | -1042.94 | 1700.0 | 2 |
| 104 | 633.67 | -842.17 | 1600.0 | 2 | 116 | -85.17 | -825.90 | 1700.0 | 2 |
| 105 | 511.06 | -970.00 | 1600.0 | 2 | 117 | 197.70 | -800.00 | 1700.0 | 2 |
| 106 | 255.78 | -1094.41 | 1600.0 | 2 | 118 | 360.51 | -874.22 | 1700.0 | 2 |
| 107 | -38.05 | -1099.22 | 1600.0 | 2 | 119 | -100.60 | -996.82 | 1700.0 | 2 |
| 108 | -178.64 | -1331.72 | 1600.0 | 2 | 120 | -345.92 | -1409.52 | 1700.0 | 2 |
| 109 | -134.31 | -1579.57 | 1600.0 | 2 | 121 | -349.82 | -1742.33 | 1700.0 | 2 |
| 110 | -180.87 | -1843.32 | 1600.0 | 2 | 122 | -648.00 | -1170.00 | 1800.0 | 2 |
| 111 | -465.22 | -1815.17 | 1600.0 | 2 | 123 | -413.06 | -1290.79 | 1800.0 | 2 |
| 112 | -700.03 | -1646.13 | 1600.0 | 2 | 124 | -505.00 | -1202.00 | 1847.0 | 2 |

4. Background Concentrations

4.1 ISCST2/RTDM

The ISCST2 and RTDM models predict hour-by-hour concentrations. Therefore, hourly SO₂ background concentrations were calculated to add to those hourly concentrations predicted for the refinery sources.

The only local, major nonrefinery SO₂ source, the Penelec Warren Station, was directly modeled as a separate background source. Background SO₂ concentrations other than from the Penelec Station were estimated using the hourly monitored concentrations and represent more distant sources.

The Penelec Warren Station source characteristics assumed for the ISCST2 and RTDM models are shown in Table 4-1. The data were obtained from a September 1992 TRC report submitted to the DER. The emission rate was based on a fuel sulfur content of 3.9 pounds per million BTUs in the fuel and full load calculations.

The EPA-recommended procedure (see the *Guideline on Air Quality Models (Revised)*) was followed to determine hourly SO₂ background concentrations. The DER Warren North and South monitors, discussed in Section 2.3, were used to exclude the contributions of the major refinery sources and the Penelec Warren Station. The measured SO₂ concentrations from the monitor(s) outside of the 90 degree sector centered on the downwind direction from the major refinery sources and from Penelec were averaged for each hour. Table 4-2 presents the monitor(s) that can be used for background concentrations for each wind direction, following the EPA procedure. For many wind directions (353°-113°) neither the North or South monitor were used to estimate background. In this case, the lesser of the minimum monitored concentration within the 90° downwind sector or the previous hourly background concentration was designated as the background concentration.

For significant periods of time, no monitored concentrations were available. The usual practice of persisting the previous hour background concentration is not valid for a gap of more than a few hours. These missing hours were treated by sorting by wind direction all the hours when background concentrations could be calculated using the EPA-recommended procedure. The eight, 45° wind direction sectors (337.5°-22.5°, 22.5°-67.5°, 67.5°-112.5°, 112.5°-157.5°, 157.5°-202.5°, 202.5°-247.5°, 247.5°-292.5°, 292.5°-337.5°) were used for the sorting process. An average hourly background concentration was calculated for each 45° sector. These are listed in Table 4-3. If monitored concentrations were not available for a given hour, the

Table 4-1
Source Characteristics for Penelec Warren Station
(from September 1992 TRC Report)

| | |
|--|------------|
| Generator Capacity | = 94 MW |
| Full Load Heat Rate (MMBtu/MWH) | = 12.66 |
| Emission Rate (Based on maximum allowable fuel sulfur content of 3.9 lb/MMBtu) | = 583 g/s |
| Stack Temperature | = 498 K |
| Stack Exit Velocity | = 16.0 m/s |
| UTM East Coordinate (km) | = 650.39 |
| UTM North Coordinate (km) | = 4632.95 |
| Source Base Elevation (ft MSL) | = 1186 |
| Stack Height | = 61.0 m |
| Stack Diameter | = 4.7 m |

Table 4-2
Monitors Used to Estimate the Hourly SO₂ Background Concentrations

| Flow Vector (deg) | Monitor | |
|-------------------|---------|-------|
| | North | South |
| 1-113 | | |
| 114-127 | X | |
| 128-272 | X | X |
| 273-352 | X | |
| 353-360 | | |

Table 4-3
Hourly Average Calculated Background Concentration by Wind Direction
Sector Using EPA-Recommended Procedures (see Table 4-1)

| Sector (°) | Average Background Concentration ($\mu\text{g}/\text{m}^3$) |
|---------------|--|
| 337.5 - 22.5 | 21.1 |
| 22.5 - 67.5 | 17.2 |
| 67.5 - 112.5 | 9.8 |
| 112.5 - 157.7 | 13.9 |
| 157.5 - 202.5 | 10.0 |
| 202.5 - 247.5 | 11.7 |
| 247.5 - 292.5 | 19.8 |
| 292.5 - 337.5 | 27.9 |

background concentration was assigned from this table based on the wind direction for that hour.

The hourly background concentrations for the Penelec Warren Station were calculated and stored separately from the monitored background concentrations. The Penelec background concentration is different for each receptor each hour. The monitored background concentration is a single value over all receptors for each hour and represents a more uniformly mixed contribution from distant sources. An annual average monitored background concentration of 18 $\mu\text{g}/\text{m}^3$ was calculated using the EPA-recommended method.

4.2 CTSCREEN

The CTSCREEN model estimates a highest, second-highest (HSH) 3 and 24 hour average concentration and an annual average concentration at each of the model receptors. Because the 3- and 24-hour averaged CTSCREEN concentrations are not linked to specific days, the background concentration cannot be explicitly calculated for these averaging times.

The Protocol indicated that the maximum 3-hour and 24-hour average background concentrations corresponding to the meteorological conditions for which CTSCREEN predicts the maximum concentrations would be used. CTSCREEN calculates maximum 1-hour average concentrations at each receptor. CTSCREEN then scales this maximum 1-hour average concentration by 0.7 to estimate the HSH 3-hour average concentration and 0.15 to estimate the HSH 24-hour average concentration. For both the neutral/stable and unstable conditions, the maximum 1-hour average concentrations predicted by CTSCREEN were with very light wind speeds less than 2 m/s. Therefore, the procedure used to estimate worst-case 3- and 24-hour average background concentrations for CTSCREEN was,

- (1) Identify the maximum hourly background during neutral/stable conditions with the tower wind speed less than 2 m/s, the wind flow between 150° to 230° (directions at tower when refinery plumes most likely to impact the two modeled hills), and observations available at both monitors (both North and South monitors are used for these directions).
- (2) The 3-hour average background was set equal to the maximum hourly background concentration.

- (3) The 24-hour average background was calculated as the daily background concentration using the EPA-recommended method for the day with the highest hourly background.
- (4) The procedure was repeated for unstable conditions.

The background concentrations calculated by this procedure are shown in Tables 4-4a and 4-4b along with the hourly monitored concentrations for the days involved. This procedure is conservative because the 24-hour average background concentration is composed of many hours with flow parallel to the valley where refinery emissions and Penelec Warren Station emissions can contribute to significant concentrations at both monitors. These high background concentrations may not be occurring on the two modeled hills. Because the Penelec Warren Station and the refinery will not impact the two hills at the same time, Penelec was not included as a CTSCREEN source.

For the annual average background all the hours of the year are considered and so the time period represented by the CTSCREEN annual concentration and the annual background must be the same. Therefore, the annual average background of $18 \mu\text{g}/\text{m}^3$ calculated using the EPA-recommended method was also applied to the CTSCREEN results.

In summary, the background concentrations for the CTSCREEN modeling were:

| | <u>Neutral/Stable</u> | <u>Unstable</u> |
|---------|-----------------------|-----------------|
| 3-hour | 76 | 56 |
| 24-hour | 79 | 40 |
| Annual | 18 | 18 |

Table 4-4a
CTSCREEN Neutral/Stable Background Concentrations

Day 353

| Hour | Wind Flow | Speed (m/s) | Stability | North Monitor | South Monitor | Background Concentration $\mu\text{g}/\text{m}^3$ |
|------|-----------|-------------|-----------|---------------|---------------|---|
| 1 | 308 | 1.9 | 6 | 60.3 | 60.3 | 60.3 |
| 2 | 299 | 1.6 | 6 | 65.5 | 81.2 | 65.5 |
| 3 | 299 | 1.7 | 6 | 73.4 | 83.8 | 73.4 |
| 4 | 155 | 1.4 | 6 | 78.6 | 73.4 | 76.0* |
| 5 | 104 | 1.7 | 6 | 81.2 | 73.4 | 73.4 |
| 6 | 102 | 1.5 | 6 | 91.7 | 68.1 | 68.1 |
| 7 | 19 | 2.0 | 6 | 110.0 | 65.5 | 65.5 |
| 8 | 352 | 3.0 | 6 | 91.7 | 62.9 | 91.7 |
| 9 | 332 | 3.4 | 6 | 65.5 | 60.3 | 65.5 |
| 10 | 357 | 1.3 | 1 | 68.1 | 60.3 | 60.3 |
| 11 | 307 | 1.6 | 1 | 65.5 | 60.3 | 65.5 |
| 12 | 307 | 2.2 | 2 | 60.3 | 68.1 | 60.3 |
| 13 | 308 | 2.9 | 1 | 73.4 | 73.4 | 73.4 |
| 14 | 61 | 1.9 | 1 | 81.2 | 83.8 | 73.4 |
| 15 | 307 | 2.6 | 1 | 102.2 | 102.2 | 102.2 |
| 16 | 308 | 3.4 | 3 | 112.7 | 120.5 | 112.7 |
| 17 | 307 | 3.3 | 5 | 81.2 | 112.7 | 81.2 |
| 18 | 289 | 2.0 | 6 | 86.5 | 96.9 | 86.5 |
| 19 | 284 | 1.9 | 6 | 117.9 | 117.9 | 117.9 |
| 20 | 268 | 1.7 | 6 | 96.9 | 125.8 | 111.3 |
| 21 | 231 | 2.0 | 6 | 78.6 | 120.5 | 99.5 |
| 22 | 262 | 1.8 | 6 | 70.7 | 96.9 | 83.8 |
| 23 | 277 | 1.7 | 6 | 62.9 | 104.8 | 62.9 |
| 24 | 285 | 1.7 | | 60.3 | 102.2 | <u>60.3</u> |
| | | | | | | 79.** |

* Maximum 1-hour (set equal to 3-hour) background concentration for speeds less than 2 m/s, wind flow between 150° to 230° and data at both monitors

** 24-hour average background used in CTSCREEN

Table 4-4b
CTSCREEN Unstable Background Concentrations

Day 56

| Hour | Wind Flow | Speed (m/s) | Stability | North Monitor | South Monitor | $\mu\text{g}/\text{m}^3$ Background Concentration |
|------|-----------|-------------|-----------|---------------|---------------|--|
| 1 | 67 | 2.0 | 4 | 5.2 | 10.5 | 0.0 |
| 2 | 78 | 1.4 | 5 | 5.2 | 7.9 | 0.0 |
| 3 | 70 | 1.6 | 5 | 2.6 | 5.2 | 0.0 |
| 4 | 62 | 1.5 | 5 | 2.6 | 15.7 | 0.0 |
| 5 | 34 | 1.2 | 6 | 2.6 | 13.1 | 0.0 |
| 6 | 313 | 0.9 | 6 | 7.9 | 13.1 | 7.9 |
| 7 | 277 | 2.3 | 4 | 13.1 | 18.3 | 13.1 |
| 8 | 281 | 1.7 | 5 | 131.0 | 39.3 | 131.0 |
| 9 | 273 | 1.7 | 3 | 165.1 | 70.7 | 165.1 |
| 10 | 232 | 1.5 | 1 | 65.5 | 94.3 | 79.9 |
| 11 | 163 | 1.1 | 1 | 52.4 | 60.3 | 56.4* |
| 12 | 126 | 1.7 | 1 | 41.9 | 47.2 | 41.9 |
| 13 | 99 | 1.7 | 1 | 41.9 | 44.5 | 41.9 |
| 14 | 63 | 2.9 | 1 | 47.2 | 31.4 | 31.4 |
| 15 | 34 | 1.8 | 1 | 26.2 | 26.2 | 26.2 |
| 16 | 35 | 1.4 | 1 | 31.4 | 31.4 | 26.2 |
| 17 | 18 | 1.7 | 1 | 36.7 | 39.3 | 26.2 |
| 18 | 55 | 2.0 | 6 | 39.3 | 26.2 | 26.2 |
| 19 | 336 | 1.9 | 6 | 23.6 | 26.2 | 23.6 |
| 20 | 315 | 2.5 | 4 | 28.8 | 31.4 | 28.8 |
| 21 | 311 | 2.4 | 5 | 44.5 | 52.4 | 44.5 |
| 22 | 312 | 2.1 | 5 | 57.6 | 68.1 | 57.6 |
| 23 | 309 | 2.0 | 5 | 70.7 | 78.6 | 70.7 |
| 24 | 288 | 1.9 | 6 | 70.7 | 73.4 | 70.7 |
| | | | | | | 40.** |

* Maximum 1-hour (set equal to 3-hour) background concentration for speeds less than 2 m/s, wind flow between 150° to 230° and data at both monitors

** 24-hour average background used in CTSCREEN

5. Air Quality Modeling Results

5.1 ISCST2/RTDM

The intermediate terrain approach using ISCST2 and RTDM resulted in predicted violations of the National Ambient Air Quality Standards (NAAQS) for SO₂ at many locations in the receptor grid. Most of these were solely attributable or largely due to the Penelec Warren Station. The modeled concentrations from the refinery alone did not result in exceedences of any air quality standards. Only a few of the predicted violations were dominated by contributions from the refinery sources. Tables 5-1 and 5-2 show the highest, second-highest 3- and 24-hour predicted concentrations that exceed the NAAQS (1300 µg/m³ for the 3-hour average and 365 µg/m³ for the 24-hour average) and the total number of violations predicted at each of those receptors. Table 5-3 shows those receptors with predicted concentrations exceeding the annual NAAQS for SO₂ (80 µg/m³).

A complete listing of all the predicted exceedances for each of the three averaging times is provided in Appendix B. The listing includes the contributions to the total concentration from Penelec, monitored background, and United Refining Company. Most of the predicted violations, as expected, are in Conewango Township.

The net contribution from the proposed modifications to the Warren Refinery to each of the predicted violations is used to determine whether the proposed modifications significantly impact a location that is not in attainment with the NAAQS. The net contribution from the refinery is the difference in contributions from Tables 2-1 and 2-2. Tables 5-1, 5-2, and 5-3 presented the maximum net contribution from the proposed modification over all the predicted violations. Significant air quality impacts by a source for SO₂ are defined as 25 µg/m³ for a 3-hour average, 5 µg/m³ for a 24-hour average, and 1 µg/m³ for an annual average. The highest predicted net impact from the refinery modification was 21.1 µg/m³ for all the 3-hour violations, 2.2 µg/m³ for all the 24-hour violations, and 0.6 µg/m³ for all the annual violations. A net contribution of exactly zero for many of the violations indicated that the refinery sources did not impact the receptor at all during that predicted violation. A complete listing of each net contribution for each predicted violation is presented as the last column of Appendix B.

5.2 CTSCREEN

CTSCREEN was initially run for the two hills south of the refinery at the 124 receptors in the grid. The results for the stable/neutral and unstable cases are presented by hill in Table 5-4. CTSCREEN predicts a maximum one-hour average concentration that is then scaled by 0.7

Table 5-1
Predicted Violations of the 3-Hour NAAQS for SO₂ (1300 µg/m³)

| Receptor | Distance (Meters) | Direction (°) | Elevation (Feet) | Highest, Second-Highest Concentration (µg/m ³) | Julian Day | Hour Ending | Number of Violations | Maximum Net Contribution of Proposed URC Modifications Over all Violations (µg/m ³) |
|----------|-------------------|---------------|---------------------|--|------------|-------------|----------------------|---|
| 76 | 1500 | 80 | 1620 | 1422 | 207 | 24 | 2 | -23.8 |
| 85 | 1500 | 90 | 1620 | 1381 | 257 | 3 | 5 | -13.0 |
| 162 | 2000 | 230 | 1860 | 1368 | 195 | 6 | 1 | 0 |
| 167 | 2000 | 240 | 1760 | 1482 | 195 | 6 | 1 | 0 |
| 169 | 5000 | 240 | 1920 | 1797 | 112 | 3 | 8 | 0 |
| 172 | 3000 | 250 | 1880 | 1612 | 98 | 6 | 3 | 0 |
| 173 | 5000 | 250 | 1860 | 2461 | 112 | 3 | 15 | -16.3 |
| 176 | 3000 | 260 | 1800 | 2293 | 195 | 6 | 12 | 0 |
| 177 | 5000 | 260 | 1850 | 3842 | 112 | 3 | 53 | -10.3 |
| 182 | 5000 | 270 | 1798 | 6739 | 69 | 9 | 138 | 20.2 |
| 195 | 5000 | 290 | 1814 | 4004 | 277 | 24 | 77 | 21.1 |
| 204 | 3000 | 300 | 1660 | 1720 | 311 | 24 | 4 | 18.6 |
| 205 | 5000 | 300 | 1820 | 2252 | 20 | 6 | 22 | 15.8 |
| 208 | 5000 | 310 | 1880 | 1552 | 41 | 6 | 4 | -5.8 |
| 242 | 3970 | 239 | 1890 (Pleasant) | 1500 | 197 | 6 | 3 | 0 |
| 243 | 4240 | 293 | 1600 (Overlook) | 1689 | 19 | 24 | 10 | 0 |
| 244 | 4607 | 304 | 1710 (Stonehill) | 1723 | 126 | 3 | 5 | -3.7 |
| 246 | 5812 | 305 | 1790 (Liberty) | 1406 | 20 | 6 | 2 | 2.3 |
| 247 | 5994 | 293 | 1760 (Preston) | 1911 | 36 | 21 | 8 | 7.1 |

Table 5-2
Predicted Violations of the 24-Hour NAAQS for SO₂ (365 µg/m³)

| Receptor | Distance (Meters) | Direction(°) | Elevation (Feet) | Highest, Second-Highest Concentration (µg/m ³) | Julian Day | Number of Violations | Maximum Net Contribution of Proposed URC Modifications Over all Violations (µg/m ³) |
|----------|----------------------|--------------|----------------------|---|------------|-------------------------|--|
| 85 | 1500 | 90 | 1620 | 389 | 97 | 1 | -6.7 |
| 169 | 5000 | 240 | 1920 | 385 | 71 | 1 | 0 |
| 173 | 5000 | 250 | 1860 | 468 | 69 | 6 | -1.3 |
| 176 | 3000 | 260 | 1800 | 487 | 61 | 2 | 0 |
| 177 | 5000 | 260 | 1850 | 642 | 231 | 20 | 0.4 |
| 182 | 5000 | 270 | 1798 | 1681 | 230 | 63 | 0 |
| 195 | 5000 | 290 | 1814 | 945 | 340 | 22 | 1.4 |
| 204 | 3000 | 300 | 1660 | 435 | 311 | 7 | 0.2 |
| 205 | 5000 | 300 | 1820 | 464 | 340 | 4 | 1.5 |
| 207 | 3000 | 310 | 1640 | 434 | 298 | 1 | 0 |
| 208 | 5000 | 310 | 1880 | 373 | 340 | 1 | 0 |
| 210 | 3000 | 320 | 1660 | 373 | 298 | 1 | 0 |
| 242 | 3970 | 239 | 1890 (Pleasant) | 405 | 69 | 3 | 0 |
| 243 | 4240 | 293 | 1600 (Overlook) | 701 | 38 | 6 | 2.2 |
| 244 | 4607 | 304 | 1710 (Stone Hill) | 441 | 41 | 3 | -0.1 |

Table 5-3
Predicted Violations of the Annual NAAQS for SO₂ (80 µg/m³)

| Receptor | Distance (Meters) | Direction(°) | Elevation (Feet) | Concentration (µg/m ³) | Maximum Net Contribution of Proposed URC Modifications Over all Violations (µg/m ³) |
|----------|----------------------|--------------|----------------------|------------------------------------|--|
| 67 | 1500 | 70 | 1640 | 81 | -2.5 |
| 76 | 1500 | 80 | 1620 | 90 | -1.2 |
| 85 | 1500 | 90 | 1620 | 90 | 0.6 |
| 177 | 5000 | 260 | 1850 | 85 | -0.3 |
| 182 | 5000 | 270 | 1798 | 184 | -0.2 |
| 195 | 5000 | 290 | 1814 | 108 | -1.0 |
| 204 | 3000 | 300 | 1660 | 132 | -1.9 |
| 205 | 5000 | 300 | 1820 | 84 | -1.9 |
| 207 | 3000 | 310 | 1640 | 116 | -1.8 |
| 210 | 3000 | 320 | 1660 | 81 | -0.9 |
| 243 | 4240 | 293 | 1600 (Overlook) | 93 | -0.3 |
| 244 | 4607 | 304 | 1710 (Stone Hill) | 86 | -1.5 |

Table 5-4
Maximum SO₂ Concentrations Predicted by CTSCREEN for Refinery Sources

| Stability Class | Hill Number | One-Hour Average | | Receptor | Elevation (feet) | Wind Direction (°) | Wind Speed (m/s) |
|-----------------|-------------|--|-----|----------|---------------------|-----------------------|---------------------|
| | | Maximum Concentration ($\mu\text{g}/\text{m}^3$) | | | | | |
| Stable/Neutral | 1 | 1292 | 40 | 1600 | 70 | 15 | 1.0 |
| Stable/Neutral | 2 | 1569 | 117 | 1700 | 15 | 15 | 1.0 |
| Unstable | 1 | 1592 | 48 | 1700 | 90 | 90 | 1.0 |
| Unstable | 2 | 1732 | 105 | 1600 | 340 | 340 | 1.0 |

to estimate the highest, second highest 3-hour average concentration, 0.15 for the highest, second-highest 24-hour concentration and 0.03 for the annual average concentration.

Because concentrations can have significant gradients in complex terrain, a dense array of receptors was placed about the receptor with the maximum predicted concentration for each stability class on each hill and CTSCREEN was rerun. These so-called "hot-spot" grids were created, and CTSCREEN rerun, according to the parameters shown in Table 5-5. A one-degree wind direction increment spanning each of the four local grids was used. A denser 25-m grid spacing was chosen for the stable/neutral case than the 50-m spacing for the unstable case because the plume is narrower and the concentration gradients sharper for the stable/neutral case. Listings of the four dense "hot-spot" receptor grids are presented in Tables 5-6 through 5-9.

The CTSCREEN modeling results for the four "hot-spot" grids are presented in Table 5-10. The maximum predicted one-hour concentrations increased for all four cases, with concentrations on hill 1 showing the largest jump. Both unstable "hot-spot" concentrations remained at the same original receptor location, while for the stable/neutral cases the maximum concentrations were 100-200 m from the original receptors. Scaling the maximum one-hour concentrations did not lead to predicted violations of the NAAQS.

The total CTSCREEN concentrations, including the background concentrations estimated in Section 4.2, are presented in Table 5-11. No violations of the NAAQS are indicated. A listing of the CTSCREEN summary outputs (SUMRE files) are attached as Appendix C.

Table 5-5
Parameters for Dense Receptor (Hot-Spot) CTSCREEN Runs

| Stability Class | Hill Number | Receptor Grid Resolution (m) | Number of Receptors | Range of Wind Directions Simulated (1° Increment) |
|-----------------|-------------|------------------------------|---------------------|---|
| Stable/Neutral | 1 | 25 | 81 | 65-75 |
| Stable/Neutral | 2 | 25 | 186 | 12-27 |
| Unstable | 1 | 50 | 25 | 85-95 |
| Unstable | 2 | 50 | 25 | 335-345 |

Table 5-6
STABLE/NEUTRAL DENSE RECEPTOR ARRAY - HILL 1

| RECEPTOR INFORMATION | | | | | | | |
|----------------------|----------------|-------------------------|--------------------------|---|----------------------|------------------------|-------------|
| REC NO. | IDENTIFICATION | EAST COORD (USER UNITS) | NORTH COORD (USER UNITS) | HEIGHT ABOVE LOCAL GRD LVL (USER UNITS) | GRD LVL (USER UNITS) | ELEVATION (USER UNITS) | HILL NUMBER |
| 1 | HILL 1 | CHO1 | -906.60 | 105.85 | .0 | 1640.0 | 1 |
| 2 | HILL 1 | CHO1 | -881.60 | 105.85 | .0 | 1640.0 | 1 |
| 3 | HILL 1 | CHO1 | -856.60 | 105.85 | .0 | 1640.0 | 1 |
| 4 | HILL 1 | CHO1 | -831.60 | 105.85 | .0 | 1620.0 | 1 |
| 5 | HILL 1 | CHO1 | -806.60 | 105.85 | .0 | 1600.0 | 1 |
| 6 | HILL 1 | CHO1 | -781.60 | 105.85 | .0 | 1580.0 | 1 |
| 7 | HILL 1 | CHO1 | -756.60 | 105.85 | .0 | 1560.0 | 1 |
| 8 | HILL 1 | CHO1 | -731.60 | 105.85 | .0 | 1540.0 | 1 |
| 9 | HILL 1 | CHO1 | -706.60 | 105.85 | .0 | 1500.0 | 1 |
| 10 | HILL 1 | CHO1 | -906.60 | 80.85 | .0 | 1660.0 | 1 |
| 11 | HILL 1 | CHO1 | -881.60 | 80.85 | .0 | 1660.0 | 1 |
| 12 | HILL 1 | CHO1 | -856.60 | 80.85 | .0 | 1660.0 | 1 |
| 13 | HILL 1 | CHO1 | -831.60 | 80.85 | .0 | 1640.0 | 1 |
| 14 | HILL 1 | CHO1 | -806.60 | 80.85 | .0 | 1620.0 | 1 |
| 15 | HILL 1 | CHO1 | -781.60 | 80.85 | .0 | 1600.0 | 1 |
| 16 | HILL 1 | CHO1 | -756.60 | 80.85 | .0 | 1560.0 | 1 |
| 17 | HILL 1 | CHO1 | -731.60 | 80.85 | .0 | 1540.0 | 1 |
| 18 | HILL 1 | CHO1 | -706.60 | 80.85 | .0 | 1520.0 | 1 |
| 19 | HILL 1 | CHO1 | -906.60 | 55.85 | .0 | 1670.0 | 1 |
| 20 | HILL 1 | CHO1 | -881.60 | 55.85 | .0 | 1670.0 | 1 |
| 21 | HILL 1 | CHO1 | -856.60 | 55.85 | .0 | 1670.0 | 1 |
| 22 | HILL 1 | CHO1 | -831.60 | 55.85 | .0 | 1660.0 | 1 |
| 23 | HILL 1 | CHO1 | -806.60 | 55.85 | .0 | 1660.0 | 1 |
| 24 | HILL 1 | CHO1 | -781.60 | 55.85 | .0 | 1620.0 | 1 |
| 25 | HILL 1 | CHO1 | -756.60 | 55.85 | .0 | 1600.0 | 1 |
| 26 | HILL 1 | CHO1 | -731.60 | 55.85 | .0 | 1580.0 | 1 |
| 27 | HILL 1 | CHO1 | -706.60 | 55.85 | .0 | 1540.0 | 1 |
| 28 | HILL 1 | CHO1 | -906.60 | 30.85 | .0 | 1660.0 | 1 |
| 29 | HILL 1 | CHO1 | -881.60 | 30.85 | .0 | 1660.0 | 1 |
| 30 | HILL 1 | CHO1 | -856.60 | 30.85 | .0 | 1660.0 | 1 |
| 31 | HILL 1 | CHO1 | -831.60 | 30.85 | .0 | 1660.0 | 1 |
| 32 | HILL 1 | CHO1 | -806.60 | 30.85 | .0 | 1640.0 | 1 |
| 33 | HILL 1 | CHO1 | -781.60 | 30.85 | .0 | 1620.0 | 1 |
| 34 | HILL 1 | CHO1 | -756.60 | 30.85 | .0 | 1600.0 | 1 |
| 35 | HILL 1 | CHO1 | -731.60 | 30.85 | .0 | 1580.0 | 1 |
| 36 | HILL 1 | CHO1 | -706.60 | 30.85 | .0 | 1660.0 | 1 |
| 37 | HILL 1 | CHO1 | -906.60 | 5.85 | .0 | 1660.0 | 1 |
| 38 | HILL 1 | CHO1 | -881.60 | 5.85 | .0 | 1650.0 | 1 |
| 39 | HILL 1 | CHO1 | -856.60 | 5.85 | .0 | 1650.0 | 1 |
| 40 | HILL 1 | CHO1 | -831.60 | 5.85 | .0 | 1660.0 | 1 |
| 41 | HILL 1 | CHO1 | -806.60 | 5.85 | .0 | 1640.0 | 1 |
| 42 | HILL 1 | CHO1 | -781.60 | 5.85 | .0 | 1630.0 | 1 |
| 43 | HILL 1 | CHO1 | -756.60 | 5.85 | .0 | 1620.0 | 1 |
| 44 | HILL 1 | CHO1 | -731.60 | 5.85 | .0 | 1600.0 | 1 |
| 45 | HILL 1 | CHO1 | -706.60 | 5.85 | .0 | 1620.0 | 1 |
| 46 | HILL 1 | CHO1 | -906.60 | -19.15 | .0 | 1620.0 | 1 |
| 47 | HILL 1 | CHO1 | -881.60 | -19.15 | .0 | 1620.0 | 1 |
| 48 | HILL 1 | CHO1 | -856.60 | -19.15 | .0 | 1630.0 | 1 |
| 49 | HILL 1 | CHO1 | -831.60 | -19.15 | .0 | 1630.0 | 1 |
| 50 | HILL 1 | CHO1 | -806.60 | -19.15 | .0 | 1630.0 | 1 |
| 51 | HILL 1 | CHO1 | -781.60 | -19.15 | .0 | 1630.0 | 1 |
| 52 | HILL 1 | CHO1 | -756.60 | -19.15 | .0 | 1620.0 | 1 |
| 53 | HILL 1 | CHO1 | -731.60 | -19.15 | .0 | 1620.0 | 1 |
| 54 | HILL 1 | CHO1 | -706.60 | -19.15 | .0 | 1600.0 | 1 |
| 55 | HILL 1 | CHO1 | -906.60 | -44.15 | .0 | 1600.0 | 1 |
| 56 | HILL 1 | CHO1 | -881.60 | -44.15 | .0 | 1600.0 | 1 |
| 57 | HILL 1 | CHO1 | -856.60 | -44.15 | .0 | 1610.0 | 1 |
| 58 | HILL 1 | CHO1 | -831.60 | -44.15 | .0 | 1610.0 | 1 |
| 59 | HILL 1 | CHO1 | -806.60 | -44.15 | .0 | 1610.0 | 1 |
| 60 | HILL 1 | CHO1 | -781.60 | -44.15 | .0 | 1610.0 | 1 |
| 61 | HILL 1 | CHO1 | -756.60 | -44.15 | .0 | 1610.0 | 1 |
| 62 | HILL 1 | CHO1 | -731.60 | -44.15 | .0 | 1610.0 | 1 |
| 63 | HILL 1 | CHO1 | -706.60 | -44.15 | .0 | 1600.0 | 1 |
| 64 | HILL 1 | CHO1 | -906.60 | -69.15 | .0 | 1580.0 | 1 |
| 65 | HILL 1 | CHO1 | -881.60 | -69.15 | .0 | 1580.0 | 1 |
| 66 | HILL 1 | CHO1 | -856.60 | -69.15 | .0 | 1590.0 | 1 |
| 67 | HILL 1 | CHO1 | -831.60 | -69.15 | .0 | 1590.0 | 1 |
| 68 | HILL 1 | CHO1 | -806.60 | -69.15 | .0 | 1600.0 | 1 |
| 69 | HILL 1 | CHO1 | -781.60 | -69.15 | .0 | 1590.0 | 1 |
| 70 | HILL 1 | CHO1 | -756.60 | -69.15 | .0 | 1590.0 | 1 |
| 71 | HILL 1 | CHO1 | -731.60 | -69.15 | .0 | 1590.0 | 1 |
| 72 | HILL 1 | CHO1 | -706.60 | -69.15 | .0 | 1580.0 | 1 |
| 73 | HILL 1 | CHO1 | -906.60 | -94.15 | .0 | 1580.0 | 1 |
| 74 | HILL 1 | CHO1 | -881.60 | -94.15 | .0 | 1580.0 | 1 |
| 75 | HILL 1 | CHO1 | -856.60 | -94.15 | .0 | 1580.0 | 1 |
| 76 | HILL 1 | CHO1 | -831.60 | -94.15 | .0 | 1580.0 | 1 |
| 77 | HILL 1 | CHO1 | -806.60 | -94.15 | .0 | 1580.0 | 1 |
| 78 | HILL 1 | CHO1 | -781.60 | -94.15 | .0 | 1580.0 | 1 |
| 79 | HILL 1 | CHO1 | -756.60 | -94.15 | .0 | 1580.0 | 1 |
| 80 | HILL 1 | CHO1 | -731.60 | -94.15 | .0 | 1580.0 | 1 |
| 81 | HILL 1 | CHO1 | -706.60 | -94.15 | .0 | 1580.0 | 1 |

Table 5-7

UNSTABLE DENSE RECEPTOR ARRAY - HILL 1

RECEPTOR INFORMATION

| REC NO. | IDENTIFICATION | EAST COORD (USER UNITS) | NORTH COORD | HEIGHT ABOVE LOCAL GRD LVL (USER UNITS) | GRD LVL ELEVATION (USER UNITS) | HILL NUMBER |
|---------|----------------|-------------------------|-------------|---|--------------------------------|-------------|
| 1 | HILL 1 | 48 | -1211.02 | 130.00 | .0 | 1630.0 |
| 2 | HILL 1 | 48 | -1211.02 | 80.00 | .0 | 1690.0 |
| 3 | HILL 1 | 48 | -1211.02 | 30.00 | .0 | 1720.0 |
| 4 | HILL 1 | 48 | -1211.02 | -20.00 | .0 | 1740.0 |
| 5 | HILL 1 | 48 | -1211.02 | -70.00 | .0 | 1720.0 |
| 6 | HILL 1 | 48 | -1161.02 | 130.00 | .0 | 1640.0 |
| 7 | HILL 1 | 48 | -1161.02 | 80.00 | .0 | 1700.0 |
| 8 | HILL 1 | 48 | -1161.02 | 30.00 | .0 | 1730.0 |
| 9 | HILL 1 | 48 | -1161.02 | -20.00 | .0 | 1720.0 |
| 10 | HILL 1 | 48 | -1161.02 | -70.00 | .0 | 1710.0 |
| 11 | HILL 1 | 48 | -1111.02 | 130.00 | .0 | 1630.0 |
| 12 | HILL 1 | 48 | -1111.02 | 80.00 | .0 | 1690.0 |
| 13 | HILL 1 | 48 | -1111.02 | 30.00 | .0 | 1700.0 |
| 14 | HILL 1 | 48 | -1111.02 | -20.00 | .0 | 1690.0 |
| 15 | HILL 1 | 48 | -1111.02 | -70.00 | .0 | 1660.0 |
| 16 | HILL 1 | 48 | -1061.02 | 130.00 | .0 | 1620.0 |
| 17 | HILL 1 | 48 | -1061.02 | 80.00 | .0 | 1680.0 |
| 18 | HILL 1 | 48 | -1061.02 | 30.00 | .0 | 1660.0 |
| 19 | HILL 1 | 48 | -1061.02 | -20.00 | .0 | 1640.0 |
| 20 | HILL 1 | 48 | -1061.02 | -70.00 | .0 | 1620.0 |
| 21 | HILL 1 | 48 | -1011.02 | 130.00 | .0 | 1610.0 |
| 22 | HILL 1 | 48 | -1011.02 | 80.00 | .0 | 1660.0 |
| 23 | HILL 1 | 48 | -1011.02 | 30.00 | .0 | 1660.0 |
| 24 | HILL 1 | 48 | -1011.02 | -20.00 | .0 | 1640.0 |
| 25 | HILL 1 | 48 | -1011.02 | -70.00 | .0 | 1610.0 |

Table 5-8
STABLE/NEUTRAL DENSE RECEPTOR ARRAY - HILL 2

| RECEPTOR INFORMATION | | | | | | | |
|----------------------|----------------|-------------------------|--------------------------|-----------------------------------|----------------------------|------------------------|---------------|
| REC NO. | IDENTIFICATION | EAST COORD (USER UNITS) | NORTH COORD (USER UNITS) | HEIGHT LOCAL GRD LVL (USER UNITS) | ABOVE GRD LVL (USER UNITS) | ELEVATION (USER UNITS) | HILL NUMBER * |
| 1 | HILL 2 | B 1 | 97.70 | -700.00 | .0 | 1620.0 | 1 |
| 2 | HILL 2 | B 2 | 122.70 | -700.00 | .0 | 1600.0 | 1 |
| 3 | HILL 2 | B 3 | 147.70 | -700.00 | .0 | 1600.0 | 1 |
| 4 | HILL 2 | B 4 | 172.70 | -700.00 | .0 | 1620.0 | 1 |
| 5 | HILL 2 | B 5 | 197.70 | -700.00 | .0 | 1640.0 | 1 |
| 6 | HILL 2 | B 6 | 222.70 | -700.00 | .0 | 1640.0 | 1 |
| 7 | HILL 2 | B 7 | 247.70 | -700.00 | .0 | 1640.0 | 1 |
| 8 | HILL 2 | B 8 | 272.70 | -700.00 | .0 | 1640.0 | 1 |
| 9 | HILL 2 | B 9 | 297.70 | -700.00 | .0 | 1620.0 | 1 |
| 10 | HILL 2 | B10 | 97.70 | -725.00 | .0 | 1640.0 | 1 |
| 11 | HILL 2 | B11 | 122.70 | -725.00 | .0 | 1620.0 | 1 |
| 12 | HILL 2 | B12 | 147.70 | -725.00 | .0 | 1620.0 | 1 |
| 13 | HILL 2 | B13 | 172.70 | -725.00 | .0 | 1640.0 | 1 |
| 14 | HILL 2 | B14 | 197.70 | -725.00 | .0 | 1660.0 | 1 |
| 15 | HILL 2 | B15 | 222.70 | -725.00 | .0 | 1680.0 | 1 |
| 16 | HILL 2 | B16 | 247.70 | -725.00 | .0 | 1680.0 | 1 |
| 17 | HILL 2 | B17 | 272.70 | -725.00 | .0 | 1680.0 | 1 |
| 18 | HILL 2 | B18 | 297.70 | -725.00 | .0 | 1680.0 | 1 |
| 19 | HILL 2 | B19 | 97.70 | -750.00 | .0 | 1660.0 | 1 |
| 20 | HILL 2 | B20 | 122.70 | -750.00 | .0 | 1640.0 | 1 |
| 21 | HILL 2 | B21 | 147.70 | -750.00 | .0 | 1640.0 | 1 |
| 22 | HILL 2 | B22 | 172.70 | -750.00 | .0 | 1660.0 | 1 |
| 23 | HILL 2 | B23 | 197.70 | -750.00 | .0 | 1680.0 | 1 |
| 24 | HILL 2 | B24 | 222.70 | -750.00 | .0 | 1680.0 | 1 |
| 25 | HILL 2 | B25 | 247.70 | -750.00 | .0 | 1700.0 | 1 |
| 26 | HILL 2 | B26 | 272.70 | -750.00 | .0 | 1700.0 | 1 |
| 27 | HILL 2 | B27 | 297.70 | -750.00 | .0 | 1700.0 | 1 |
| 28 | HILL 2 | B28 | 97.70 | -775.00 | .0 | 1660.0 | 1 |
| 29 | HILL 2 | B29 | 122.70 | -775.00 | .0 | 1660.0 | 1 |
| 30 | HILL 2 | B30 | 147.70 | -775.00 | .0 | 1660.0 | 1 |
| 31 | HILL 2 | B31 | 172.70 | -775.00 | .0 | 1680.0 | 1 |
| 32 | HILL 2 | B32 | 197.70 | -775.00 | .0 | 1680.0 | 1 |
| 33 | HILL 2 | B33 | 222.70 | -775.00 | .0 | 1700.0 | 1 |
| 34 | HILL 2 | B34 | 247.70 | -775.00 | .0 | 1720.0 | 1 |
| 35 | HILL 2 | B35 | 272.70 | -775.00 | .0 | 1720.0 | 1 |
| 36 | HILL 2 | B36 | 297.70 | -775.00 | .0 | 1720.0 | 1 |
| 37 | HILL 2 | B37 | 97.70 | -800.00 | .0 | 1700.0 | 1 |
| 38 | HILL 2 | B38 | 122.70 | -800.00 | .0 | 1680.0 | 1 |
| 39 | HILL 2 | B39 | 147.70 | -800.00 | .0 | 1680.0 | 1 |
| 40 | HILL 2 | B40 | 172.70 | -800.00 | .0 | 1680.0 | 1 |
| 41 | HILL 2 | B41 | 197.70 | -800.00 | .0 | 1700.0 | 1 |
| 42 | HILL 2 | B42 | 222.70 | -800.00 | .0 | 1720.0 | 1 |
| 43 | HILL 2 | B43 | 247.70 | -800.00 | .0 | 1720.0 | 1 |
| 44 | HILL 2 | B44 | 272.70 | -800.00 | .0 | 1740.0 | 1 |
| 45 | HILL 2 | B45 | 297.70 | -800.00 | .0 | 1740.0 | 1 |
| 46 | HILL 2 | B46 | 97.70 | -825.00 | .0 | 1700.0 | 1 |
| 47 | HILL 2 | B47 | 122.70 | -825.00 | .0 | 1700.0 | 1 |
| 48 | HILL 2 | B48 | 147.70 | -825.00 | .0 | 1700.0 | 1 |
| 49 | HILL 2 | B49 | 172.70 | -825.00 | .0 | 1700.0 | 1 |
| 50 | HILL 2 | B50 | 197.70 | -825.00 | .0 | 1720.0 | 1 |
| 51 | HILL 2 | B51 | 222.70 | -825.00 | .0 | 1720.0 | 1 |
| 52 | HILL 2 | B52 | 247.70 | -825.00 | .0 | 1740.0 | 1 |
| 53 | HILL 2 | B53 | 272.70 | -825.00 | .0 | 1740.0 | 1 |
| 54 | HILL 2 | B54 | 297.70 | -825.00 | .0 | 1740.0 | 1 |
| 55 | HILL 2 | B55 | 97.70 | -850.00 | .0 | 1720.0 | 1 |
| 56 | HILL 2 | B56 | 122.70 | -850.00 | .0 | 1720.0 | 1 |
| 57 | HILL 2 | B57 | 147.70 | -850.00 | .0 | 1720.0 | 1 |
| 58 | HILL 2 | B58 | 172.70 | -850.00 | .0 | 1720.0 | 1 |
| 59 | HILL 2 | B59 | 197.70 | -850.00 | .0 | 1720.0 | 1 |
| 60 | HILL 2 | B60 | 222.70 | -850.00 | .0 | 1740.0 | 1 |
| 61 | HILL 2 | B61 | 247.70 | -850.00 | .0 | 1740.0 | 1 |
| 62 | HILL 2 | B62 | 272.70 | -850.00 | .0 | 1740.0 | 1 |
| 63 | HILL 2 | B63 | 297.70 | -850.00 | .0 | 1740.0 | 1 |
| 64 | HILL 2 | B64 | 97.70 | -875.00 | .0 | 1740.0 | 1 |
| 65 | HILL 2 | B65 | 122.70 | -875.00 | .0 | 1740.0 | 1 |
| 66 | HILL 2 | B66 | 147.70 | -875.00 | .0 | 1740.0 | 1 |
| 67 | HILL 2 | B67 | 172.70 | -875.00 | .0 | 1740.0 | 1 |
| 68 | HILL 2 | B68 | 197.70 | -875.00 | .0 | 1740.0 | 1 |
| 69 | HILL 2 | B69 | 222.70 | -875.00 | .0 | 1740.0 | 1 |
| 70 | HILL 2 | B70 | 247.70 | -875.00 | .0 | 1740.0 | 1 |
| 71 | HILL 2 | B71 | 272.70 | -875.00 | .0 | 1740.0 | 1 |
| 72 | HILL 2 | B72 | 297.70 | -875.00 | .0 | 1740.0 | 1 |
| 73 | HILL 2 | B73 | 97.70 | -900.00 | .0 | 1740.0 | 1 |
| 74 | HILL 2 | B74 | 122.70 | -900.00 | .0 | 1740.0 | 1 |
| 75 | HILL 2 | B75 | 147.70 | -900.00 | .0 | 1740.0 | 1 |
| 76 | HILL 2 | B76 | 172.70 | -900.00 | .0 | 1740.0 | 1 |
| 77 | HILL 2 | B77 | 197.70 | -900.00 | .0 | 1740.0 | 1 |
| 78 | HILL 2 | B78 | 222.70 | -900.00 | .0 | 1740.0 | 1 |
| 79 | HILL 2 | B79 | 247.70 | -900.00 | .0 | 1720.0 | 1 |

Table 5-8 - Continued

| | | | | | | | |
|-----|------|---|------|---------|---------|---|--------|
| 80 | HILL | 2 | B80 | 272.70 | -900.00 | 0 | 1720.0 |
| 81 | HILL | 2 | B81 | 297.70 | -900.00 | 0 | 1720.0 |
| 82 | HILL | 2 | B82 | -2.30 | -700.00 | 0 | 1720.0 |
| 83 | HILL | 2 | B83 | 22.70 | -700.00 | 0 | 1720.0 |
| 84 | HILL | 2 | B84 | 47.70 | -700.00 | 0 | 1700.0 |
| 85 | HILL | 2 | B85 | 72.70 | -700.00 | 0 | 1660.0 |
| 86 | HILL | 2 | B86 | -2.30 | -725.00 | 0 | 1720.0 |
| 87 | HILL | 2 | B87 | 22.70 | -725.00 | 0 | 1720.0 |
| 88 | HILL | 2 | B88 | 47.70 | -725.00 | 0 | 1700.0 |
| 89 | HILL | 2 | B89 | 72.70 | -725.00 | 0 | 1680.0 |
| 90 | HILL | 2 | B90 | -2.30 | -750.00 | 0 | 1720.0 |
| 91 | HILL | 2 | B91 | 22.70 | -750.00 | 0 | 1720.0 |
| 92 | HILL | 2 | B92 | 47.70 | -750.00 | 0 | 1720.0 |
| 93 | HILL | 2 | B93 | 72.70 | -750.00 | 0 | 1680.0 |
| 94 | HILL | 2 | B94 | -2.30 | -775.00 | 0 | 1730.0 |
| 95 | HILL | 2 | B95 | 22.70 | -775.00 | 0 | 1730.0 |
| 96 | HILL | 2 | B96 | 47.70 | -775.00 | 0 | 1720.0 |
| 97 | HILL | 2 | B97 | 72.70 | -775.00 | 0 | 1700.0 |
| 98 | HILL | 2 | B98 | -2.30 | -800.00 | 0 | 1730.0 |
| 99 | HILL | 2 | B99 | 22.70 | -800.00 | 0 | 1730.0 |
| 100 | HILL | 2 | B100 | 47.70 | -800.00 | 0 | 1720.0 |
| 101 | HILL | 2 | B101 | 72.70 | -800.00 | 0 | 1720.0 |
| 102 | HILL | 2 | B102 | -2.30 | -825.00 | 0 | 1740.0 |
| 103 | HILL | 2 | B103 | 22.70 | -825.00 | 0 | 1740.0 |
| 104 | HILL | 2 | B104 | 47.70 | -825.00 | 0 | 1720.0 |
| 105 | HILL | 2 | B105 | 72.70 | -825.00 | 0 | 1720.0 |
| 106 | HILL | 2 | B106 | -2.30 | -850.00 | 0 | 1740.0 |
| 107 | HILL | 2 | B107 | 22.70 | -850.00 | 0 | 1740.0 |
| 108 | HILL | 2 | B108 | 47.70 | -850.00 | 0 | 1740.0 |
| 109 | HILL | 2 | B109 | 72.70 | -850.00 | 0 | 1730.0 |
| 110 | HILL | 2 | B110 | -2.30 | -875.00 | 0 | 1740.0 |
| 111 | HILL | 2 | B111 | 22.70 | -875.00 | 0 | 1740.0 |
| 112 | HILL | 2 | B112 | 47.70 | -875.00 | 0 | 1740.0 |
| 113 | HILL | 2 | B113 | 72.70 | -875.00 | 0 | 1740.0 |
| 114 | HILL | 2 | B114 | -2.30 | -900.00 | 0 | 1740.0 |
| 115 | HILL | 2 | B115 | 22.70 | -900.00 | 0 | 1740.0 |
| 116 | HILL | 2 | B116 | 47.70 | -900.00 | 0 | 1740.0 |
| 117 | HILL | 2 | B117 | 72.70 | -900.00 | 0 | 1740.0 |
| 118 | HILL | 2 | B118 | -27.30 | -700.00 | 0 | 1710.0 |
| 119 | HILL | 2 | B119 | -27.30 | -725.00 | 0 | 1720.0 |
| 120 | HILL | 2 | B120 | -27.30 | -750.00 | 0 | 1720.0 |
| 121 | HILL | 2 | B121 | -27.30 | -775.00 | 0 | 1730.0 |
| 122 | HILL | 2 | B122 | -27.30 | -800.00 | 0 | 1730.0 |
| 123 | HILL | 2 | B123 | -27.30 | -825.00 | 0 | 1740.0 |
| 124 | HILL | 2 | B124 | -27.30 | -850.00 | 0 | 1740.0 |
| 125 | HILL | 2 | B125 | -27.30 | -875.00 | 0 | 1740.0 |
| 126 | HILL | 2 | B126 | -27.30 | -900.00 | 0 | 1740.0 |
| 127 | HILL | 2 | B127 | -52.30 | -700.00 | 0 | 1700.0 |
| 128 | HILL | 2 | B128 | -52.30 | -725.00 | 0 | 1700.0 |
| 129 | HILL | 2 | B129 | -52.30 | -750.00 | 0 | 1710.0 |
| 130 | HILL | 2 | B130 | -52.30 | -775.00 | 0 | 1720.0 |
| 131 | HILL | 2 | B131 | -52.30 | -800.00 | 0 | 1720.0 |
| 132 | HILL | 2 | B132 | -52.30 | -825.00 | 0 | 1730.0 |
| 133 | HILL | 2 | B133 | -52.30 | -850.00 | 0 | 1740.0 |
| 134 | HILL | 2 | B134 | -52.30 | -875.00 | 0 | 1740.0 |
| 135 | HILL | 2 | B135 | -52.30 | -900.00 | 0 | 1740.0 |
| 136 | HILL | 2 | B136 | -77.30 | -700.00 | 0 | 1660.0 |
| 137 | HILL | 2 | B137 | -77.30 | -725.00 | 0 | 1680.0 |
| 138 | HILL | 2 | B138 | -77.30 | -750.00 | 0 | 1690.0 |
| 139 | HILL | 2 | B139 | -77.30 | -775.00 | 0 | 1700.0 |
| 140 | HILL | 2 | B140 | -77.30 | -800.00 | 0 | 1710.0 |
| 141 | HILL | 2 | B141 | -77.30 | -825.00 | 0 | 1720.0 |
| 142 | HILL | 2 | B142 | -77.30 | -850.00 | 0 | 1730.0 |
| 143 | HILL | 2 | B143 | -77.30 | -875.00 | 0 | 1740.0 |
| 144 | HILL | 2 | B144 | -77.30 | -900.00 | 0 | 1740.0 |
| 145 | HILL | 2 | B145 | -102.30 | -700.00 | 0 | 1630.0 |
| 146 | HILL | 2 | B146 | -102.30 | -725.00 | 0 | 1640.0 |
| 147 | HILL | 2 | B147 | -102.30 | -750.00 | 0 | 1640.0 |
| 148 | HILL | 2 | B148 | -102.30 | -775.00 | 0 | 1660.0 |
| 149 | HILL | 2 | B149 | -102.30 | -800.00 | 0 | 1680.0 |
| 150 | HILL | 2 | B150 | -102.30 | -825.00 | 0 | 1700.0 |
| 151 | HILL | 2 | B151 | -102.30 | -850.00 | 0 | 1720.0 |
| 152 | HILL | 2 | B152 | -102.30 | -875.00 | 0 | 1730.0 |
| 153 | HILL | 2 | B153 | -102.30 | -900.00 | 0 | 1730.0 |
| 154 | HILL | 2 | B153 | -102.30 | -925.00 | 0 | 1710.0 |
| 155 | HILL | 2 | B153 | -102.30 | -950.00 | 0 | 1710.0 |
| 156 | HILL | 2 | B153 | -102.30 | -975.00 | 0 | 1680.0 |
| 157 | HILL | 2 | B153 | -127.30 | -925.00 | 0 | 1710.0 |
| 158 | HILL | 2 | B153 | -127.30 | -950.00 | 0 | 1710.0 |
| 159 | HILL | 2 | B153 | -127.30 | -975.00 | 0 | 1710.0 |
| 160 | HILL | 2 | B153 | -152.30 | -925.00 | 0 | 1710.0 |
| 161 | HILL | 2 | B153 | -152.30 | -950.00 | 0 | 1710.0 |
| 162 | HILL | 2 | B153 | -152.30 | -975.00 | 0 | 1710.0 |
| 163 | HILL | 2 | B153 | -177.30 | -925.00 | 0 | 1680.0 |
| 164 | HILL | 2 | B153 | -177.30 | -950.00 | 0 | 1710.0 |
| 165 | HILL | 2 | B153 | -177.30 | -975.00 | 0 | 1710.0 |
| 166 | HILL | 2 | B153 | -77.30 | -925.00 | 0 | 1710.0 |
| 167 | HILL | 2 | B153 | -77.30 | -950.00 | 0 | 1700.0 |
| 168 | HILL | 2 | B153 | -77.30 | -975.00 | 0 | 1690.0 |
| 169 | HILL | 2 | B153 | -52.30 | -925.00 | 0 | 1710.0 |

*

Table 5-8 - Concluded

| | | | | | | | | |
|-----|------|---|------|---------|---------|----|--------|----|
| 170 | HILL | 2 | B153 | -52.30 | -950.00 | .0 | 1700.0 | 1* |
| 171 | HILL | 2 | B153 | -52.30 | -975.00 | .0 | 1680.0 | 1 |
| 172 | HILL | 2 | B153 | -27.30 | -925.00 | .0 | 1710.0 | 1 |
| 173 | HILL | 2 | B153 | -27.30 | -950.00 | .0 | 1700.0 | 1 |
| 174 | HILL | 2 | B153 | -27.30 | -975.00 | .0 | 1680.0 | 1 |
| 175 | HILL | 2 | B153 | -127.30 | -900.00 | .0 | 1720.0 | 1 |
| 176 | HILL | 2 | B153 | -127.30 | -875.00 | .0 | 1720.0 | 1 |
| 177 | HILL | 2 | B153 | -127.30 | -850.00 | .0 | 1690.0 | 1 |
| 178 | HILL | 2 | B153 | -127.30 | -825.00 | .0 | 1670.0 | 1 |
| 179 | HILL | 2 | B153 | -152.30 | -900.00 | .0 | 1710.0 | 1 |
| 180 | HILL | 2 | B153 | -152.30 | -875.00 | .0 | 1690.0 | 1 |
| 181 | HILL | 2 | B153 | -152.30 | -850.00 | .0 | 1660.0 | 1 |
| 182 | HILL | 2 | B153 | -152.30 | -825.00 | .0 | 1640.0 | 1 |
| 183 | HILL | 2 | B153 | -177.30 | -900.00 | .0 | 1680.0 | 1 |
| 184 | HILL | 2 | B153 | -177.30 | -875.00 | .0 | 1650.0 | 1 |
| 185 | HILL | 2 | B153 | -177.30 | -850.00 | .0 | 1630.0 | 1 |
| 186 | HILL | 2 | B153 | -177.30 | -825.00 | .0 | 1610.0 | 1 |

* The hill number must equal 1 when only a single hill is modeled.

Table 5-9

UNSTABLE DENSE RECEPTOR ARRAY - HILL 2

| RECEPTOR INFORMATION | | | | | | | |
|----------------------|----------------|----------------------------|-----------------------------|---|--------------------------------------|-------------|---|
| REC NO. | IDENTIFICATION | EAST COORD (USER UNITS) | NORTH COORD (USER UNITS) | HEIGHT ABOVE LOCAL GRD LVL (USER UNITS) | GRD LVL ELEVATION (USER UNITS) | HILL NUMBER | |
| 1 | HILL 2 | 51 | 411.06 | -870.00 | .0 | 1680.0 | 1 |
| 2 | HILL 2 | 51 | 411.06 | -920.00 | .0 | 1640.0 | 1 |
| 3 | HILL 2 | 51 | 411.06 | -970.00 | .0 | 1600.0 | 1 |
| 4 | HILL 2 | 51 | 411.06 | -1020.00 | .0 | 1580.0 | 1 |
| 5 | HILL 2 | 51 | 411.06 | -1070.00 | .0 | 1540.0 | 1 |
| 6 | HILL 2 | 51 | 461.06 | -870.00 | .0 | 1670.0 | 1 |
| 7 | HILL 2 | 51 | 461.06 | -920.00 | .0 | 1630.0 | 1 |
| 8 | HILL 2 | 51 | 461.06 | -970.00 | .0 | 1600.0 | 1 |
| 9 | HILL 2 | 51 | 461.06 | -1020.00 | .0 | 1560.0 | 1 |
| 10 | HILL 2 | 51 | 461.06 | -1070.00 | .0 | 1520.0 | 1 |
| 11 | HILL 2 | 51 | 511.06 | -870.00 | .0 | 1660.0 | 1 |
| 12 | HILL 2 | 51 | 511.06 | -920.00 | .0 | 1630.0 | 1 |
| 13 | HILL 2 | 51 | 511.06 | -970.00 | .0 | 1600.0 | 1 |
| 14 | HILL 2 | 51 | 511.06 | -1020.00 | .0 | 1560.0 | 1 |
| 15 | HILL 2 | 51 | 511.06 | -1070.00 | .0 | 1510.0 | 1 |
| 16 | HILL 2 | 51 | 561.06 | -870.00 | .0 | 1660.0 | 1 |
| 17 | HILL 2 | 51 | 561.06 | -920.00 | .0 | 1630.0 | 1 |
| 18 | HILL 2 | 51 | 561.06 | -970.00 | .0 | 1600.0 | 1 |
| 19 | HILL 2 | 51 | 561.06 | -1020.00 | .0 | 1560.0 | 1 |
| 20 | HILL 2 | 51 | 561.06 | -1070.00 | .0 | 1520.0 | 1 |
| 21 | HILL 2 | 51 | 611.06 | -870.00 | .0 | 1640.0 | 1 |
| 22 | HILL 2 | 51 | 611.06 | -920.00 | .0 | 1620.0 | 1 |
| 23 | HILL 2 | 51 | 611.06 | -970.00 | .0 | 1600.0 | 1 |
| 24 | HILL 2 | 51 | 611.06 | -1020.00 | .0 | 1550.0 | 1 |
| 25 | HILL 2 | 51 | 611.06 | -1070.00 | .0 | 1520.0 | 1 |

* The hill number must equal 1 when only a single hill is modeled.

Table 5-10
Maximum SO₂ Concentrations Predicted by CTSCREEN with Dense Receptor Grids for Refinery Sources

| Stability Class | Hill Number | One-Hour Average Maximum Concentration ($\mu\text{g}/\text{m}^3$) | Scaled Concentrations | | | Location Relative to Original Maximum Concentration | Elevation (feet) | Wind Direction (°) | Wind Speed (m) |
|-----------------|-------------|---|-----------------------|-----------|--------|---|------------------|--------------------|----------------|
| | | | HSH 3-hr | HSH 24-hr | Annual | | | | |
| Stable/Neutral | 1 | 1731 | 1212 | 260 | 52 | 100 m West | 1660 | 72 | 1.0 |
| Stable/Neutral | 2 | 1734 | 1214 | 260 | 52 | 200 m East | 1730 | 16 | 1.0 |
| Unstable | 1 | 1756 | 1229 | 263 | 53 | Same | 1700 | 93 | 1.0 |
| Unstable | 2 | 1766 | 1236 | 265 | 53 | Same | 1600 | 342 | 1.0 |

CTSCREEN Scaling Factors:

| | |
|---|------|
| 1-hour to highest, second-highest 3-hour | 0.70 |
| 1-hour to highest, second-highest 24-hour | 0.15 |
| 1-hour to annual | 0.03 |

Table 5-11
 Maximum SO₂ Concentrations Predicted by CTSCREEN with Dense Receptor Grids
 for Refinery and Background Concentrations

| Stability Class | Hill Number | Total Scaled Concentrations* | | |
|-----------------|-------------|------------------------------|-------------|--------|
| | | HSH 3-Hour | HSH 24-Hour | Annual |
| Stable/Neutral | 1 | 1288 | 339 | 70 |
| Stable/Neutral | 2 | 1290 | 339 | 70 |
| Unstable | 1 | 1285 | 303 | 71 |
| Unstable | 2 | 1292 | 305 | 71 |

Background Concentrations (µg/m³)

| | |
|------------------------|----|
| 3-hour stable/neutral | 76 |
| 3-hour unstable | 56 |
| 24-hour stable/neutral | 79 |
| 24-hour unstable | 40 |
| Annual | 18 |

Appendix A

*Correspondence Pertaining to
Modeling Protocol*

ENSR Reference: 6910-004
ENSR Doc. No.: EPMC-5650

ENSR Consulting
and Engineering
35 Nagog Park
Acton, Massachusetts 01720
(508) 635-9500

November 2, 1989

Mr. Robert Simonson
Pennsylvania Department of
Environmental Resources
2nd and Chestnut Street
Air Quality Bureau - 1st floor
Harrisburg, PA 17120

Subject: United Refining Company
RTDM Modeling of SO₂ Emissions

Dear Bob:

At the request of United Refining Company, I am writing this letter to outline for you the modeling tasks which ENSR Consulting and Engineering will be conducting in conjunction with the dispersion-modeling analysis of ambient SO₂ impacts in the vicinity of the Warren refinery. One year of on-site meteorological data will be processed for input to RTDM in default mode to evaluate the impact of facility SO₂ emissions in areas of terrain above stack height. Meteorological data collected at the on-site tower from the period August 1988 through July 1989 will be used. The two-level tower had measurements of wind speed and direction at 30- and 70- meters and temperature and sigma theta at 30 meters.

ENSR has divided the work plan into four specific activities, each of which is discussed below.

Processing On On-Site Meteorological Data

Validated meteorological data will be provided to ENSR by United Refining in the Odessa "ENVAID" format on floppy diskettes. These data will be used to develop multiple sequential hourly meteorological data files in a format acceptable as input to RTDM. Due to the various stack heights and stack gas characteristics of the SO₂ sources at the Warren Refinery (see Table 1), the choice of tower level wind direction for best simulating plume transport and the wind speeds for plume rise and plume dilution calculations will vary by stack.

ENSR will develop three separate meteorological input files for RTDM. For stack heights less than 30 meters with low buoyancy

RECEIVED
UNITED REFINING COMPANY
PROJECT #

NOV 06 1989

Page 2
Mr. Robert Simonson
November 2, 1989

flux, the 30 meter-level wind direction and wind speed will be used for determining plume transport direction and both plume rise and plume dilution calculations. Stacks of moderate height (between 30 and 50 meters) with high buoyancy flux will be modeled using the 30 meter-level wind speeds for plume rise calculations and the 70-meter wind data for plume dilution and plume transport. RTDM can accept separate wind speeds for plume rise (stack-top level) and for plume dilution (at the plume level). For the tallest stack (the 69-meter boiler house stack), the 70-meter level will be used for all dispersion calculations.

Hourly stability class values will be obtained from the 30-m level sigma theta and wind speed measurements. The surface roughness length will be determined by examining days with high winds (when it is certainly neutral), and noting a representative value for each condition. Since the average 30-m sigma theta value in neutral conditions for a 15-cm surface roughness length is 8.1° , the ratio between the site-specific neutral average for sigma theta and 8.1° can be used to alter the sigma theta look-up table values to obtain a site-specific stability class estimate. (Note that the adjustment of the sigma ranges will also account for the measurement height being different than 10 meters.) Then, the stability class determination using sigma theta can proceed with this site-specific adjustment. Ambient temperature input data for modeling purposes will be obtained from the tower lower-level measurements. The mixed layer height data is available from the National Data Climatic Center using Pittsburgh surface and upper air data.

Preliminary data capture statistics indicate that site-specific data for all measured variables are available for over 95% of the hours in the one-year period. Some substitution may be possible with two tower levels; e.g., use the 30-m wind direction if the 70-m level is not available. Otherwise, meteorological data from Bradford Airport will be used to fill in for the few remaining missing hours. A priority listing of sources of data for meteorological input to RTDM is provided in Table 2.

Receptor Grid and Terrain Profiles

A polar grid of approximately 360 receptors will be employed in the modeling analysis. Ten receptor rings with 36 points at each distance will be chosen. Ring distances will be selected to coincide with the areas of maximum impact as predicted by VALLEY modeling done previously for United Refining. The center of the receptor grid will be carefully chosen to represent a common source



Page 3
Mr. Robert Simonson
November 2, 1989

location for all stacks. Subsequent model runs may be needed to investigate the benefit of modeling with two or more common source locations.

RTDM also requires the input of a terrain profile in each of 36 directions in order to calculate plume reflection from terrain. ENSR will establish these profiles for model input.

Execute RTDM

ENSR will run RTDM in default mode (the regulatory-approved third-level screening application) with one year of processed on-site meteorological data to calculate maximum 3-hour, 24-hour and annual SO₂ concentrations from United Refining's SO₂ emission sources. Source data will be provided by United Refining as shown in Table 1. Multiple runs will be made for the different stack categories/meteorological data sets and the resultant concentrations files summed using POSTBLP. Table 3 lists the technical options which will be exercised in RTDM. Critical impact periods will be remodeled to identify the contribution of the various refinery sources.

Documentation

ENSR will summarize the results of the modeling analysis in a brief report for submission to the DER. The need for any further studies can be discussed subsequent to DER's review.

Please contact Mark Sternberg at United Refining or me if you have any questions or comments concerning this plan.

Sincerely,

Robert M. Iwanchuk
Senior Program Manager

RMI/smq

Attachment

cc: M. Sternberg/United Refining
R. Paine/ENSR
M. Jindal/ENSR

TABLE 1

**UNITED REFINING COMPANY
SULFUR DIOXIDE EMISSIONS (Preliminary)**

| ID | SOURCE | STACK TEMP | SCFM FLUE GAS | ACFM FLUE GAS | STACK HEIGHT FT | STACK DIAM FT | SO2 TOTAL LB/HR |
|--------------|--------------------------|------------|------------------|------------------|--------------------|------------------|-----------------------|
| A | BOILER HOUSE (1) | 650 | 37500 | 80000 | 225 | 8.0 | 268.0 |
| B | NO. 4 BOILER | 450 | 36000 | 63000 | 150 | 7.0 | 15.0 |
| C | FCC CHARGE HEATER | 600 | 13200 | 26900 | 125 | 4.0 | 2.0 |
| D | DHT HEATER | 700 | 1700 | 3800 | 100 | 3.0 | 1.0 |
| E | PREFRACT REBOILER A | 680 | 1800 | 3900 | 40 | 2.0 | 1.5 |
| F | B | 680 | 1800 | 3900 | 40 | 2.0 | 1.5 |
| G | OLD REFORMER HEATER | 700 | 25100 | 56000 | 150 | 6.2 | 63.0 |
| H | CRUDE (WHECO) HEATER (2) | 700 | 67000 | 149500 | 150 | 8.5 | 262.0 |
| I | PRETREATER HEATER | 420 | 11000 | 18600 | 170 | 6.2 | 16.0 |
| J | NEW REFORMER HEATER | 460 | 27000 | 47800 | 150 | 7.0 | 12.0 |
| K | DEBUT REBOILER | 700 | 4800 | 10700 | 100 | 2.8 | 2.0 |
| L | FCC REGENERATOR | 450 | 60000 | 105000 | 150 | 7.0 | 314.0 |
| M | COMBO FLARE (BLOWDOWN) | 1800 | 7000 | 30400 | 24 | 10.0 | 1.0 |
| N | FCC FLARE (BLOWDOWN) | 1800 | 1800 | 7800 | 35 | 11.0 | 0.5 |
| O | NO. 5 BOILER | 600 | 14400 | 29400 | 100 | 4.0 | 2.0 |
| P | T-451 HEATER | 700 | 600 | 1300 | 40 | 1.5 | 0.5 |
| Q | SAT GAS KVG | 1100 | 1100 | 3300 | 25 | 0.8 | 0.5 |
| U | T-441 HEATER | 700 | 3600 | 8000 | 40 | 2.5 | 0.5 |
| TOTAL | | | | | | | 963.0 |

- NOTES 1) INCLUDES EXHAUSTS FROM NOS 1, 2, AND 3
BOILERS AND THE SULFUR RECOVERY UNIT.
- 2) INCLUDES EXHAUSTS FROM THE CRUDE AND
VACUUM HEATERS.

TABLE 2
SOURCES OF DATA FOR METEOROLOGICAL INPUT

| | 1st Choice | | | 2nd Choice | | | 3rd Choice |
|-----------------------------------|---|---|---|-------------------------------------|---|------------------------------------|--------------|
| | Short Stacks <u>Low Buoyancy</u> | Moderate Stacks <u>High Buoyancy</u> | High Stack <u>High Buoyancy</u> | Short Stacks <u>Low Buoyancy</u> | Moderate Stacks <u>High Buoyancy</u> | High Stack <u>High Buoyancy</u> | |
| Plume Transport Wind Direction | 30-m Level | 70-m Level | 70-m Level | 70-m Level | 30-m Level | 30-m Level | Bradford NWS |
| Stack Top WS* | 30-m Level | 30-m Level | 70-m Level | 70-m Level | 70-m Level | 30-m Level | Bradford NWS |
| Plume Height WS** | 30-m Level | 70-m Level | 70-m Level | 70-m Level | 30-m Level | 30-m Level | Bradford NWS |
| Ambient Temperature | 30-m Level | 30-m Level | 30-m Level | Bradford NWS | Bradford NWS | Bradford NWS | |
| Stability | 30-m Sigma Theta and Wind Speed | 30-m Sigma Theta and Wind Speed | 30-m Sigma Theta and Wind Speed | Bradford NWS (Turner Method) | Bradford NWS (Turner Method) | Bradford NWS (Turner Method) | |
| Mixed Layer | Pittsburg Data (Surface/Upper Air) plus hourly stability class | Pittsburg Data (Surface/Upper Air) plus hourly stability class | Pittsburg Data (Surface/Upper Air) plus hourly stability class | | | | |

*scaled to stack top

**scaled to plume height

TABLE 3
PROPOSED RTDM MODELING OPTIONS

| <u>Option Description</u> | <u>Value</u> |
|---|---------------------------------|
| Wind Measurement Height | 30 or 70 m (see Table 2) |
| Wind Profile Exponents | .09 .11. .12, .14. .20, .30 |
| Partial Plume Penetration | Not Used |
| Buoyancy-Enhanced Dispersion | Used - Coefficient = 3.162 |
| Mixing Height | Unlimited for Stable Conditions |
| Transitional Plume Rise | Used |
| Plume Path Correction Factor | 0.5 |
| Vertical Potential Temperature Gradient | E = .02, F = .035 |
| Stack-Tip Downwash | Used |
| Dilution Wind Speed Scaled to Plume Height | Used |
| Wind Shear | Not Used |
| Partial Surface Reflection | Used |
| Sector Averaging | Used, 22.5° Sectors |
| Hourly values of: turbulence; vertical potential temperature gradient; wind speed profile exponents; stack emissions | Not Used |
| 8693H 6890-004 | |



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL RESOURCES

Post Office Box 2357
Harrisburg, Pennsylvania 17105-2357

April 17, 1991

Bureau of Air Quality Control
(717)-787-4310

Dr. Lloyd L. Schulman
SIGMA RESEARCH CORPORATION
234 Littleton Road, Suite 2E
Westford, MA 01886

Dear Dr. Schulman:

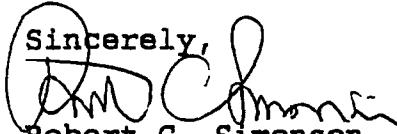
Your letter of March 20, 1991 enclosing the proposed protocol for the modeling of the United Refining facility in Warren, PA has been referred to me for comments.

DER agrees in principle with your proposal to model first the four major sources in Table 2-1 (A,G,H, and L). The total plant impact may be assessed at a later point in the modeling based upon the identification of the worst case meteorological conditions. It is noted that CTSCREEN will be used for those receptors above stack height and ISCST for those receptors below the stack tops. We acknowledge the technique used to identify the receptor grid. It is understood that any potential "hot spots" identified in the modeling will be fully analyzed and included in the final study results.

With reference to page 10 of the protocol document we agree with your approach to limit the wind directions in order to identify the greatest impact. You should attempt to identify the specific sources contributing significantly to receptors with concentrations greater than permitted under NAAQS.

As noted in the protocol, we shall anticipate receiving modeling input and output on floppy disc. These data should include the meteorological data obtained from the site meteorological tower in a format suitable for the ISCST model.

It is our understanding that your modeling will commence upon receipt of this letter and that the study should be completed in approximately two months. Please do not hesitate to call if any problems are discovered during the modeling phase of this study.

Sincerely,

Robert C. Simonson
Chief, Meteorology/Modeling Section
Div. of Air Resource Management

J. Slade - ARM (CO)
L. Wonders - Meadville Regional Office
Mark Sternberg - United Refining



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL RESOURCES

August 24, 1992

Bureau of Air Quality Control

(717)-787-4310

Dr. Lloyd L. Schulman
SIGMA RESEARCH CORPORATION
196 Baker Avenue
Concord, MA 01742

RE: United Refining Company
Modeling Protocol

Dear Dr. Schulman:

We reference your letter of August 6, 1992, subject as above. We have a few comments concerning your proposed modeling protocol for the facility.

We envision two distinct scenarios of modeling that are related to the two goals that you stated in your letter. In order to demonstrate that the newly proposed units will not result in any net change in the Conewango Township non-attainment area, it will be necessary to model the existing facility to establish a "baseline". The new units, as well as any changes to existing sources, will then be added to the existing plant to show no net change.

The final configuration of United Refining with allowables must be modeled with Penelec's Warren Generating Station to demonstrate compliance with the NAAQS in the area. It is understood that "intermediate terrain" will be addressed using the results from ISC2 and RTDM.

As in the past, we shall expect to receive on disk the modeling input and output files used in the preparation of your report to United Refining.

Please feel free to call should you have any questions.

Sincerely,
A handwritten signature in black ink, appearing to read 'RC Simonson'.

Robert C. Simonson
Chief, Meteorology/Modeling Section
Division of Air Resource Management

Ref: A188

October 21, 1992

Mr. Robert C. Simonson
Chief, Meteorology/Modeling Section
Dept. of Environmental Resources
Division of Air Resource Management
P.O. Box 2357
Harrisburg, PA 17105-2357

Dear Mr. Simonson:

At our meeting with you on 16 October 1992, we discussed the modeling protocol for the United Refining Company (URC) Warren refinery. This letter presents our understanding of the substance of those discussions and our plans for future modeling.

- (1) The March 1991 URC modeling protocol discussed the procedures for modeling SO₂ concentrations on the two hills across the Allegheny River to the south of the refinery. Those procedures, which proposed using the CTSCREEN model at 124 receptors (with subsequent hot-spot modeling as requested by DER) will still be followed. Worst-case background concentrations for CTSCREEN have been estimated for the worst-case meteorological conditions from the following steps:
 - (a) Identify the maximum hourly background during neutral/stable conditions with the tower wind speed less than 2 m/s, the wind flow between 150° to 230° (directions at tower when refinery plumes are most likely to impact the two modeled hills), and observations available at both monitors (both Warren North and South monitors are used for these directions.)
 - (b) The 3-hour average background was set equal to the maximum hourly background concentration.
 - (c) The 24-hour average background was calculated as the daily background concentration using the EPA-recommended method for the day with the highest hourly background.
 - (d) The procedure was repeated for unstable conditions.

Mr. Robert C. Simonson
Page 2
October 21, 1992

This procedure is conservative because the 24-hour average background concentration is composed of many hours with flow parallel to the valley where URC refinery and Penelec emissions can lead to high concentrations at both monitors. The CTSCREEN background concentrations (more complete data will accompany the final report) were estimated as: 76 $\mu\text{g}/\text{m}^3$ for 3-hour neutral/stable conditions, 79 $\mu\text{g}/\text{m}^3$ for 24-hour neutral/stable, 56 $\mu\text{g}/\text{m}^3$ for 3-hour unstable, 40 $\mu\text{g}/\text{m}^3$ for 24-hour unstable and 18 $\mu\text{g}/\text{m}^3$ for annual. Because Penelec station and URC will not impact the two hills at the same time, Penelec will not be included as a CTSCREEN source.

- (2) ISCST2 and RTDM will be used to model all locations other than the two hills to the south (where CTSCREEN is used). Intermediate terrain rules, using the EPA model POSTIT, will be used for this project. Therefore, RTDM and ISCST2 must both be applied to the entire receptor grid. The receptor grid used in the 1989 RTDM model simulations by ENSR, except for those receptors on the two hills being modeled with CTSCREEN, will be adopted. In addition, the 57 receptors along the URC property line will be included in the receptor grid, as well as six existing Penelec monitoring sites. This is a total of 315 receptors, which are listed in Table 1. Near the refinery the proposed receptors coincide with many of the receptor locations in the March 1991 modeling protocol, where only ISCST and CTSCREEN were used (March 1991, ISCST receptor rings at 300, 400, 500, 600, 700, 900, 1200, 1400, 1700 and 2000 m and proposed RTDM/ISCST2 receptor rings at 300, 400, 500, 600, 800, 1000, 1500, and 2000 m).
- (3) The URC refinery, Penelec, and hourly monitored background concentrations will be summed to calculate the total concentrations at the receptor grid. Penelec will be modeled using the emission characteristics on page 12 of the September 1992 TRC report, but producing 448 g/s of SO_2 (based on 3 lbs per million BTUs). The hourly background concentrations will be determined from the DER Warren North and South monitors using the EPA recommended procedure, as proposed in our March 1991 protocol.
- (4) The one year of meteorological data August 1988-July 1989, as proposed in our March 1991 protocol, will be used. For RTDM, the tower wind speeds at 30 m and 70 m will be used for plume rise and dilution of URC sources as specified in the November 1989 ENSR protocol. For Penelec,

Mr. Robert C. Simonson
Page 3
October 21, 1992

because the stack-top is 200 feet high, the 70 m wind speed will be used for both plume rise and dilution.

- (5) The net impact of the proposed URC refinery modification (proposed emissions minus current emissions) will be calculated at all receptors for all events where violations of the NAAQS are predicted. This net impact will be compared with the increments of 1, 5, and 25 $\mu\text{g}/\text{m}^3$ to determine the significance of the proposed URC modification on annual, 24-hour, or 3-hour averaged predicted NAAQS violations. Conewango Township is currently designated nonattainment for SO₂ and predicted violations are expected. If violations are calculated outside of Conewango Township the contributions by source will be provided, as well as the net impact of the URC modification.
- (6) In addition to a final report, floppy disks with the ASCII model input files and output files, and binary meteorological data will be provided to DER.

Because of the tight schedule, we will be proceeding with these modeling procedures. If you have any questions or comments, please call me at (508) 371-4269.

Sincerely yours,



Lloyd L. Schulman, Ph.D.
Certified Consulting Meteorologist

LLS/nk
Encl.

Appendix B

ISCST2/RTDM Predicted Exceedances with Corresponding Net Refinery Contributions

| | |
|-------------|---|
| REC: | Receptor number |
| JDAY: | Julian day |
| HR: | Hour ending |
| EXCEEDENCE: | Concentrations exceeding NAAQS in units of $\mu\text{g}/\text{m}^3$ |
| P: | Penelec Warren Station contribution |
| BCK: | Monitored background contribution |
| URC: | Refinery contribution |
| URCNET: | Net refinery contribution from proposed modifications |

| REC | JDAY | HR | EXCEEDENCE | P | BCK | URC | URCNET |
|-----|------|----|------------|---------|--------|---------|---------|
| 76 | 28 | 24 | 1368.00 | 179.20 | 91.70 | 1096.94 | -30.07 |
| 76 | 112 | 6 | 1586.00 | 413.20 | 9.61 | 1162.74 | -11.34 |
| 76 | 207 | 24 | 1421.00 | 414.30 | 2.62 | 1003.87 | -23.75 |
| 77 | 112 | 6 | 1389.00 | 679.80 | 9.61 | 699.05 | -107.50 |
| 85 | 13 | 21 | 1348.00 | 433.80 | 5.24 | 909.22 | -13.75 |
| 85 | 97 | 24 | 1423.00 | 525.50 | 1.75 | 896.14 | -53.34 |
| 85 | 112 | 6 | 1372.00 | 411.20 | 9.61 | 951.00 | -13.00 |
| 85 | 177 | 6 | 1313.00 | 484.30 | 0.00 | 828.59 | -29.42 |
| 85 | 257 | 3 | 1381.00 | 456.80 | 0.00 | 924.26 | -21.32 |
| 85 | 281 | 3 | 1307.00 | 430.30 | 8.73 | 867.88 | -59.76 |
| 154 | 61 | 6 | 1365.00 | 1348.00 | 17.03 | 0.00 | 0.00 |
| 162 | 61 | 6 | 1479.00 | 1462.00 | 17.03 | 0.00 | 0.00 |
| 162 | 195 | 6 | 1368.00 | 1358.00 | 10.04 | 0.00 | 0.00 |
| 163 | 106 | 6 | 1347.00 | 1347.00 | 0.00 | 0.00 | 0.00 |
| 164 | 69 | 6 | 1308.00 | 1295.00 | 12.66 | 0.00 | 0.00 |
| 167 | 61 | 6 | 1600.00 | 1583.00 | 17.03 | 0.00 | 0.00 |
| 167 | 195 | 6 | 1482.00 | 1471.00 | 10.04 | 0.00 | 0.00 |
| 168 | 106 | 6 | 1560.00 | 1560.00 | 0.00 | 0.00 | 0.00 |
| 169 | 45 | 24 | 1529.00 | 1525.00 | 3.49 | 0.00 | 0.00 |
| 169 | 69 | 6 | 1675.00 | 1663.00 | 12.66 | 0.00 | 0.00 |
| 169 | 69 | 9 | 1522.00 | 1511.00 | 10.92 | 0.00 | 0.00 |
| 169 | 71 | 24 | 1481.00 | 1465.00 | 15.72 | 0.00 | 0.00 |
| 169 | 112 | 3 | 1797.00 | 1781.00 | 16.16 | 0.00 | 0.00 |
| 169 | 119 | 3 | 1856.00 | 1850.00 | 6.55 | 0.00 | 0.00 |
| 169 | 171 | 24 | 1372.00 | 1370.00 | 1.75 | 0.00 | 0.00 |
| 169 | 206 | 6 | 1681.00 | 1656.00 | 25.33 | 0.00 | 0.00 |
| 169 | 293 | 6 | 1325.00 | 1314.00 | 10.48 | 0.00 | 0.00 |
| 172 | 98 | 6 | 1612.00 | 1612.00 | 0.00 | 0.00 | 0.00 |
| 172 | 105 | 24 | 1410.00 | 1407.00 | 3.06 | 0.00 | 0.00 |
| 172 | 106 | 6 | 1825.00 | 1825.00 | 0.00 | 0.00 | 0.00 |
| 172 | 117 | 24 | 1551.00 | 1512.00 | 37.99 | 0.00 | 0.00 |
| 173 | 45 | 24 | 2169.00 | 2165.00 | 3.49 | 0.00 | 0.00 |
| 173 | 58 | 24 | 1680.00 | 1648.00 | 31.88 | 0.00 | 0.00 |
| 173 | 69 | 6 | 1581.00 | 1569.00 | 12.66 | 0.00 | 0.00 |
| 173 | 71 | 24 | 1422.00 | 1406.00 | 15.72 | 0.00 | 0.00 |
| 173 | 88 | 24 | 1543.00 | 1405.00 | 27.07 | 110.34 | -16.31 |
| 173 | 112 | 3 | 2461.00 | 2445.00 | 16.16 | 0.00 | 0.00 |
| 173 | 119 | 3 | 2554.00 | 2547.00 | 6.55 | 0.00 | 0.00 |
| 173 | 157 | 3 | 1694.00 | 1694.00 | 0.44 | 0.00 | 0.00 |
| 173 | 180 | 6 | 1658.00 | 1656.00 | 1.75 | 0.00 | 0.00 |
| 173 | 206 | 6 | 2275.00 | 2249.00 | 25.33 | 0.00 | 0.00 |
| 173 | 211 | 6 | 1482.00 | 1477.00 | 4.80 | 0.00 | 0.00 |
| 173 | 230 | 24 | 1764.00 | 1764.00 | 0.00 | 0.00 | 0.00 |
| 173 | 231 | 3 | 1688.00 | 1688.00 | 0.00 | 0.00 | 0.00 |
| 173 | 293 | 6 | 1842.00 | 1831.00 | 10.48 | 0.00 | 0.00 |
| 173 | 326 | 21 | 1732.00 | 1726.00 | 5.24 | 0.00 | 0.00 |
| 173 | 345 | 21 | 1498.00 | 1479.00 | 19.21 | 0.00 | 0.00 |
| 176 | 61 | 6 | 2446.00 | 2429.00 | 17.03 | 0.00 | 0.00 |
| 176 | 98 | 6 | 1864.00 | 1864.00 | 0.00 | 0.00 | 0.00 |
| 176 | 105 | 24 | 1627.00 | 1624.00 | 3.06 | 0.00 | 0.00 |
| 176 | 106 | 3 | 1713.00 | 1712.00 | 0.44 | 0.00 | 0.00 |
| 176 | 106 | 6 | 2148.00 | 2148.00 | 0.00 | 0.00 | 0.00 |
| 176 | 117 | 24 | 1777.00 | 1739.00 | 37.99 | 0.00 | 0.00 |
| 176 | 192 | 3 | 1323.00 | 1322.00 | 0.87 | 0.00 | 0.00 |
| 176 | 192 | 6 | 1358.00 | 1358.00 | 0.00 | 0.00 | 0.00 |
| 176 | 195 | 3 | 1429.00 | 1421.00 | 7.86 | 0.00 | 0.00 |
| 176 | 195 | 6 | 2293.00 | 2283.00 | 10.04 | 0.00 | 0.00 |
| 176 | 276 | 3 | 1401.00 | 1382.00 | 18.34 | 0.00 | 0.00 |
| 176 | 327 | 3 | 1878.00 | 1874.00 | 3.93 | 0.00 | 0.00 |
| 176 | 362 | 9 | 1623.00 | 1612.00 | 10.48 | 0.00 | 0.00 |
| 177 | 24 | 24 | 1474.00 | 1352.00 | 121.40 | 0.00 | 0.00 |
| 177 | 29 | 6 | 1752.00 | 1737.00 | 14.85 | 0.00 | 0.00 |
| 177 | 35 | 24 | 1797.00 | 1731.00 | 17.03 | 49.43 | -10.56 |
| 177 | 45 | 24 | 3305.00 | 3301.00 | 3.49 | 0.00 | 0.00 |
| 177 | 48 | 3 | 1565.00 | 1563.00 | 1.75 | 0.00 | 0.00 |
| 177 | 49 | 6 | 1440.00 | 1431.00 | 8.30 | 0.00 | 0.00 |
| 177 | 58 | 24 | 2607.00 | 2575.00 | 31.88 | 0.00 | 0.00 |
| 177 | 69 | 3 | 1523.00 | 1498.00 | 24.45 | 0.00 | 0.00 |
| 177 | 69 | 9 | 1761.00 | 1750.00 | 10.92 | 0.00 | 0.00 |
| 177 | 71 | 21 | 1333.00 | 1326.00 | 6.11 | 0.00 | 0.00 |
| 177 | 71 | 24 | 2220.00 | 2205.00 | 15.72 | 0.00 | 0.00 |
| 177 | 88 | 24 | 2316.00 | 2174.00 | 27.07 | 115.28 | -16.53 |
| 177 | 99 | 3 | 1746.00 | 1743.00 | 2.62 | 0.00 | 0.00 |
| 177 | 105 | 21 | 2054.00 | 2052.00 | 2.18 | 0.00 | 0.00 |
| 177 | 105 | 24 | 1495.00 | 1492.00 | 3.06 | 0.00 | 0.00 |
| 177 | 112 | 3 | 3842.00 | 3826.00 | 16.16 | 0.00 | 0.00 |
| 177 | 115 | 21 | 1794.00 | 1789.00 | 4.80 | 0.00 | 0.00 |
| 177 | 116 | 24 | 1753.00 | 1746.00 | 7.42 | 0.00 | 0.00 |
| 177 | 118 | 21 | 1621.00 | 1614.00 | 6.99 | 0.00 | 0.00 |
| 177 | 119 | 3 | 3923.00 | 3917.00 | 6.55 | 0.00 | 0.00 |
| 177 | 121 | 24 | 1433.00 | 1432.00 | 0.00 | 0.00 | 0.00 |
| 177 | 130 | 24 | 1665.00 | 1664.00 | 1.31 | 0.00 | 0.00 |
| 177 | 131 | 3 | 1798.00 | 1797.00 | 0.87 | 0.00 | 0.00 |
| 177 | 135 | 24 | 1743.00 | 1739.00 | 3.49 | 0.00 | 0.00 |
| 177 | 136 | 3 | 1788.00 | 1740.00 | 0.00 | 48.36 | -10.69 |
| 177 | 137 | 21 | 1704.00 | 1697.00 | 7.86 | 0.00 | 0.00 |
| 177 | 157 | 3 | 2643.00 | 2642.00 | 0.44 | 0.00 | 0.00 |
| 177 | 157 | 6 | 1699.00 | 1698.00 | 0.87 | 0.00 | 0.00 |

| | | | | | | | |
|-----|-----|----|---------|---------|--------|--------|--------|
| 177 | 167 | 21 | 1555.00 | 1550.00 | 5.24 | 0.00 | 0.00 |
| 177 | 176 | 21 | 1384.00 | 1381.00 | 2.62 | 0.00 | 0.00 |
| 177 | 180 | 21 | 1655.00 | 1650.00 | 5.24 | 0.00 | 0.00 |
| 177 | 188 | 24 | 1559.00 | 1556.00 | 2.62 | 0.00 | 0.00 |
| 177 | 189 | 3 | 1735.00 | 1734.00 | 0.87 | 0.00 | 0.00 |
| 177 | 193 | 24 | 1532.00 | 1531.00 | 1.75 | 0.00 | 0.00 |
| 177 | 196 | 21 | 1977.00 | 1964.00 | 13.10 | 0.00 | 0.00 |
| 177 | 205 | 6 | 1747.00 | 1739.00 | 8.73 | 0.00 | 0.00 |
| 177 | 205 | 21 | 1337.00 | 1329.00 | 7.86 | 0.00 | 0.00 |
| 177 | 206 | 6 | 3517.00 | 3492.00 | 25.33 | 0.00 | 0.00 |
| 177 | 211 | 6 | 2287.00 | 2282.00 | 4.80 | 0.00 | 0.00 |
| 177 | 222 | 21 | 1396.00 | 1374.00 | 22.71 | 0.00 | 0.00 |
| 177 | 230 | 3 | 1356.00 | 1355.00 | 0.87 | 0.00 | 0.00 |
| 177 | 230 | 21 | 1403.00 | 1403.00 | 0.00 | 0.00 | 0.00 |
| 177 | 230 | 24 | 2777.00 | 2777.00 | 0.00 | 0.00 | 0.00 |
| 177 | 231 | 3 | 2641.00 | 2641.00 | 0.00 | 0.00 | 0.00 |
| 177 | 231 | 24 | 1737.00 | 1737.00 | 0.00 | 0.00 | 0.00 |
| 177 | 233 | 24 | 1679.00 | 1678.00 | 0.00 | 0.00 | 0.00 |
| 177 | 241 | 6 | 1756.00 | 1744.00 | 12.23 | 0.00 | 0.00 |
| 177 | 241 | 21 | 1582.00 | 1518.00 | 0.00 | 64.42 | -10.26 |
| 177 | 293 | 6 | 2907.00 | 2897.00 | 10.48 | 0.00 | 0.00 |
| 177 | 326 | 21 | 2639.00 | 2633.00 | 5.24 | 0.00 | 0.00 |
| 177 | 327 | 24 | 1687.00 | 1671.00 | 16.16 | 0.35 | 0.06 |
| 177 | 328 | 3 | 1372.00 | 1360.00 | 11.79 | 0.00 | 0.00 |
| 177 | 345 | 21 | 2326.00 | 2307.00 | 19.21 | 0.00 | 0.00 |
| 177 | 356 | 9 | 1563.00 | 1547.00 | 15.72 | 0.00 | 0.00 |
| 182 | 4 | 21 | 1839.00 | 1756.00 | 11.35 | 71.41 | 0.17 |
| 182 | 21 | 9 | 1825.00 | 1803.00 | 22.27 | 0.00 | 0.00 |
| 182 | 24 | 21 | 1792.00 | 1710.00 | 82.09 | 0.00 | 0.00 |
| 182 | 24 | 24 | 3151.00 | 3029.00 | 121.40 | 0.00 | 0.00 |
| 182 | 25 | 3 | 1573.00 | 1533.00 | 39.74 | 0.00 | 0.00 |
| 182 | 33 | 3 | 1515.00 | 1513.00 | 1.31 | 0.00 | 0.00 |
| 182 | 33 | 6 | 1811.00 | 1810.00 | 1.31 | 0.00 | 0.00 |
| 182 | 33 | 24 | 1359.00 | 1343.00 | 16.16 | 0.00 | 0.00 |
| 182 | 34 | 3 | 1647.00 | 1622.00 | 24.89 | 0.00 | 0.00 |
| 182 | 34 | 9 | 2967.00 | 2943.00 | 24.45 | 0.00 | 0.00 |
| 182 | 34 | 18 | 2096.00 | 2066.00 | 29.69 | 0.00 | 0.00 |
| 182 | 35 | 3 | 1574.00 | 1562.00 | 11.79 | 0.00 | 0.00 |
| 182 | 35 | 6 | 3522.00 | 3518.00 | 4.37 | 0.00 | 0.00 |
| 182 | 36 | 6 | 1704.00 | 1702.00 | 2.18 | 0.00 | 0.00 |
| 182 | 45 | 24 | 3646.00 | 3642.00 | 3.49 | 0.00 | 0.00 |
| 182 | 46 | 3 | 2064.00 | 1972.00 | 10.48 | 81.64 | 3.98 |
| 182 | 46 | 18 | 1467.00 | 1463.00 | 4.37 | 0.00 | 0.00 |
| 182 | 48 | 3 | 1503.00 | 1502.00 | 1.75 | 0.00 | 0.00 |
| 182 | 48 | 24 | 2065.00 | 2050.00 | 15.72 | 0.00 | 0.00 |
| 182 | 49 | 3 | 1660.00 | 1648.00 | 12.66 | 0.00 | 0.00 |
| 182 | 49 | 9 | 1694.00 | 1686.00 | 7.86 | 0.00 | 0.00 |
| 182 | 53 | 6 | 1765.00 | 1763.00 | 1.75 | 0.00 | 0.00 |
| 182 | 58 | 21 | 1898.00 | 1881.00 | 16.59 | 0.00 | 0.00 |
| 182 | 58 | 24 | 5534.00 | 5502.00 | 31.88 | 0.00 | 0.00 |
| 182 | 68 | 24 | 4928.00 | 4900.00 | 27.95 | 0.00 | 0.00 |
| 182 | 69 | 3 | 5205.00 | 5180.00 | 24.45 | 0.00 | 0.00 |
| 182 | 69 | 6 | 7512.00 | 7497.00 | 12.66 | 0.00 | 0.00 |
| 182 | 69 | 9 | 6739.00 | 6728.00 | 10.92 | 0.00 | 0.00 |
| 182 | 69 | 21 | 2709.00 | 2696.00 | 13.10 | 0.00 | 0.00 |
| 182 | 71 | 3 | 1367.00 | 1297.00 | 70.74 | 0.00 | 0.00 |
| 182 | 71 | 21 | 2681.00 | 2675.00 | 6.11 | 0.00 | 0.00 |
| 182 | 71 | 24 | 6712.00 | 6699.00 | 15.72 | 0.00 | 0.00 |
| 182 | 77 | 6 | 1405.00 | 1309.00 | 38.43 | 57.50 | -7.76 |
| 182 | 81 | 21 | 2316.00 | 2303.00 | 7.86 | 4.52 | -0.91 |
| 182 | 84 | 24 | 1912.00 | 1898.00 | 14.41 | 0.00 | 0.00 |
| 182 | 85 | 6 | 2175.00 | 2158.00 | 17.03 | 0.00 | 0.00 |
| 182 | 88 | 24 | 4703.00 | 4676.00 | 27.07 | 0.00 | 0.00 |
| 182 | 89 | 18 | 1331.00 | 1312.00 | 18.34 | 0.00 | 0.00 |
| 182 | 90 | 3 | 4045.00 | 4020.00 | 25.33 | 0.00 | 0.00 |
| 182 | 90 | 6 | 3615.00 | 3592.00 | 22.71 | 0.00 | 0.00 |
| 182 | 94 | 21 | 1515.00 | 1505.00 | 9.61 | 0.00 | 0.00 |
| 182 | 97 | 21 | 1371.00 | 1369.00 | 1.75 | 0.00 | 0.00 |
| 182 | 99 | 3 | 5574.00 | 5571.00 | 2.62 | 0.00 | 0.00 |
| 182 | 105 | 21 | 4356.00 | 4354.00 | 2.18 | 0.00 | 0.00 |
| 182 | 105 | 24 | 3095.00 | 3092.00 | 3.06 | 0.00 | 0.00 |
| 182 | 107 | 21 | 1909.00 | 1869.00 | 41.05 | 0.00 | 0.00 |
| 182 | 108 | 21 | 4921.00 | 4919.00 | 2.18 | 0.00 | 0.00 |
| 182 | 111 | 24 | 1577.00 | 1569.00 | 8.30 | 0.00 | 0.00 |
| 182 | 112 | 3 | 5774.00 | 5758.00 | 16.16 | 0.00 | 0.00 |
| 182 | 112 | 21 | 1699.00 | 1691.00 | 8.73 | 0.00 | 0.00 |
| 182 | 112 | 24 | 3126.00 | 3123.00 | 2.62 | 0.00 | 0.00 |
| 182 | 114 | 21 | 3746.00 | 3743.00 | 2.62 | 0.00 | 0.00 |
| 182 | 114 | 24 | 3702.00 | 3696.00 | 6.11 | 0.00 | 0.00 |
| 182 | 115 | 21 | 2988.00 | 2983.00 | 4.80 | 0.00 | 0.00 |
| 182 | 115 | 24 | 2162.00 | 2018.00 | 10.48 | 133.85 | -16.31 |
| 182 | 116 | 9 | 2093.00 | 2087.00 | 6.99 | 0.00 | 0.00 |
| 182 | 116 | 21 | 2143.00 | 2131.00 | 11.35 | 0.00 | 0.00 |
| 182 | 116 | 24 | 3754.00 | 3628.00 | 7.42 | 117.98 | -12.74 |
| 182 | 117 | 24 | 2127.00 | 2089.00 | 37.99 | 0.00 | 0.00 |
| 182 | 118 | 21 | 3487.00 | 3480.00 | 6.99 | 0.00 | 0.00 |
| 182 | 118 | 24 | 1879.00 | 1875.00 | 3.93 | 0.00 | 0.00 |
| 182 | 119 | 3 | 5889.00 | 5882.00 | 6.55 | 0.00 | 0.00 |
| 182 | 120 | 24 | 2364.00 | 2359.00 | 5.24 | 0.00 | 0.00 |
| 182 | 121 | 6 | 2342.00 | 2338.00 | 3.93 | 0.00 | 0.00 |

| | | | | | | | |
|-----|-----|-----|---------|---------|-------|--------|--------|
| 182 | 121 | 24 | 4224.00 | 4224.00 | 0.00 | 0.00 | 0.00 |
| 182 | 122 | 3 | 3526.00 | 3527.00 | 0.00 | 0.00 | 0.00 |
| 182 | 122 | 6 | 1986.00 | 1982.00 | 3.49 | 0.00 | 0.00 |
| 182 | 130 | 24 | 2374.00 | 2373.00 | 1.31 | 0.00 | 0.00 |
| 182 | 136 | 3 | 3633.00 | 3633.00 | 0.00 | 0.00 | 0.00 |
| 182 | 136 | 21 | 2771.00 | 2758.00 | 13.10 | 0.00 | 0.00 |
| 182 | 137 | 21 | 3627.00 | 3619.00 | 7.86 | 0.00 | 0.00 |
| 182 | 139 | 21 | 1804.00 | 1786.00 | 17.03 | 0.00 | 0.00 |
| 182 | 142 | 21 | 2411.00 | 2411.00 | 0.00 | 0.00 | 0.00 |
| 182 | 144 | 3 | 3281.00 | 3281.00 | 0.00 | 0.00 | 0.00 |
| 182 | 148 | 21 | 1576.00 | 1576.00 | 0.44 | 0.00 | 0.00 |
| 182 | 152 | 3 | 1804.00 | 1802.00 | 2.62 | 0.00 | 0.00 |
| 182 | 156 | 24 | 1902.00 | 1902.00 | 0.00 | 0.00 | 0.00 |
| 182 | 157 | 3 | 4702.00 | 4702.00 | 0.44 | 0.00 | 0.00 |
| 182 | 157 | 6 | 5286.00 | 5285.00 | 0.87 | 0.00 | 0.00 |
| 182 | 162 | 21 | 1813.00 | 1811.00 | 1.75 | 0.00 | 0.00 |
| 182 | 167 | 21 | 3320.00 | 3315.00 | 5.24 | 0.00 | 0.00 |
| 182 | 167 | 24 | 1976.00 | 1973.00 | 2.62 | 0.00 | 0.00 |
| 182 | 171 | 24 | 6247.00 | 6244.00 | 1.75 | 0.00 | 0.00 |
| 182 | 172 | 3 | 3748.00 | 3653.00 | 0.87 | 94.67 | 20.20 |
| 182 | 175 | 21 | 1341.00 | 1327.00 | 13.10 | 0.00 | 0.00 |
| 182 | 176 | 21 | 2897.00 | 2894.00 | 2.62 | 0.00 | 0.00 |
| 182 | 179 | 24 | 1600.00 | 1590.00 | 9.61 | 0.00 | 0.00 |
| 182 | 180 | 6 | 5377.00 | 5375.00 | 1.75 | 0.00 | 0.00 |
| 182 | 180 | .21 | 3592.00 | 3586.00 | 5.24 | 0.00 | 0.00 |
| 182 | 181 | 21 | 1792.00 | 1697.00 | 10.48 | 85.60 | -11.12 |
| 182 | 188 | 24 | 3354.00 | 3351.00 | 2.62 | 0.00 | 0.00 |
| 182 | 189 | 3 | 3648.00 | 3647.00 | 0.87 | 0.00 | 0.00 |
| 182 | 193 | 3 | 3659.00 | 3658.00 | 1.75 | 0.00 | 0.00 |
| 182 | 194 | 3 | 3412.00 | 3412.00 | 0.00 | 0.00 | 0.00 |
| 182 | 194 | 21 | 2266.00 | 2254.00 | 11.35 | 0.00 | 0.00 |
| 182 | 196 | 21 | 4223.00 | 4210.00 | 13.10 | 0.00 | 0.00 |
| 182 | 197 | 6 | 2057.00 | 2048.00 | 9.17 | 0.00 | 0.00 |
| 182 | 198 | 21 | 1859.00 | 1766.00 | 14.41 | 78.30 | -9.02 |
| 182 | 205 | 6 | 3655.00 | 3646.00 | 8.73 | 0.00 | 0.00 |
| 182 | 205 | 21 | 2889.00 | 2773.00 | 7.86 | 107.78 | -9.57 |
| 182 | 206 | 6 | 3806.00 | 3672.00 | 25.33 | 109.64 | -9.90 |
| 182 | 209 | 21 | 2348.00 | 2287.00 | 1.31 | 60.66 | -7.97 |
| 182 | 210 | 21 | 2810.00 | 2800.00 | 10.92 | 0.00 | 0.00 |
| 182 | 211 | 6 | 4872.00 | 4867.00 | 4.80 | 0.00 | 0.00 |
| 182 | 222 | 21 | 2884.00 | 2862.00 | 22.71 | 0.00 | 0.00 |
| 182 | 223 | 3 | 2720.00 | 2709.00 | 11.19 | 0.00 | 0.00 |
| 182 | 229 | 24 | 1459.00 | 1458.00 | 0.87 | 0.00 | 0.00 |
| 182 | 230 | 3 | 3108.00 | 3107.00 | 0.87 | 0.00 | 0.00 |
| 182 | 230 | 6 | 1405.00 | 1405.00 | 0.00 | 0.00 | 0.00 |
| 182 | 230 | 21 | 2256.00 | 2256.00 | 0.00 | 0.00 | 0.00 |
| 182 | 230 | 24 | 5953.00 | 5952.00 | 0.00 | 0.00 | 0.00 |
| 182 | 231 | 3 | 5512.00 | 5512.00 | 0.00 | 0.00 | 0.00 |
| 182 | 231 | 21 | 1602.00 | 1602.00 | 0.00 | 0.00 | 0.00 |
| 182 | 232 | 24 | 2061.00 | 2060.00 | 0.87 | 0.00 | 0.00 |
| 182 | 233 | 21 | 2814.00 | 2814.00 | 0.00 | 0.00 | 0.00 |
| 182 | 233 | 24 | 5340.00 | 5340.00 | 0.00 | 0.00 | 0.00 |
| 182 | 234 | 21 | 1658.00 | 1655.00 | 3.49 | 0.00 | 0.00 |
| 182 | 241 | 9 | 1651.00 | 1639.00 | 12.23 | 0.00 | 0.00 |
| 182 | 241 | 21 | 3080.00 | 3045.00 | 0.00 | 35.03 | -5.67 |
| 182 | 243 | 21 | 1845.00 | 1843.00 | 1.75 | 0.00 | 0.00 |
| 182 | 258 | 3 | 3675.00 | 3675.00 | 0.00 | 0.00 | 0.00 |
| 182 | 269 | 18 | 2029.00 | 2028.00 | 0.87 | 0.00 | 0.00 |
| 182 | 275 | 24 | 2409.00 | 2397.00 | 11.35 | 0.00 | 0.00 |
| 182 | 279 | 21 | 1353.00 | 1274.00 | 5.24 | 73.67 | -9.78 |
| 182 | 282 | 24 | 3763.00 | 3697.00 | 65.50 | 0.00 | 0.00 |
| 182 | 292 | 6 | 3677.00 | 3662.00 | 15.13 | 0.00 | 0.00 |
| 182 | 292 | 24 | 1444.00 | 1438.00 | 6.99 | 0.00 | 0.00 |
| 182 | 293 | 3 | 2088.00 | 2078.00 | 9.61 | 0.00 | 0.00 |
| 182 | 293 | 6 | 6065.00 | 6057.00 | 10.48 | 0.00 | 0.00 |
| 182 | 318 | 24 | 3904.00 | 3693.00 | 75.98 | 135.34 | -14.81 |
| 182 | 326 | 6 | 1310.00 | 1290.00 | 20.09 | 0.00 | 0.00 |
| 182 | 326 | 18 | 1864.00 | 1859.00 | 4.37 | 0.00 | 0.00 |
| 182 | 326 | 21 | 2703.00 | 2698.00 | 5.24 | 0.00 | 0.00 |
| 182 | 328 | 3 | 2430.00 | 2419.00 | 11.79 | 0.00 | 0.00 |
| 182 | 333 | 18 | 2703.00 | 2696.00 | 6.11 | 0.00 | 0.00 |
| 182 | 345 | 24 | 3662.00 | 3637.00 | 24.02 | 0.00 | 0.00 |
| 182 | 356 | 9 | 3286.00 | 3270.00 | 15.72 | 0.00 | 0.00 |
| 182 | 365 | 18 | 1342.00 | 1320.00 | 21.83 | 0.00 | 0.00 |
| 182 | 365 | 21 | 2418.00 | 2400.00 | 17.90 | 0.00 | 0.00 |
| 195 | 2 | 3 | 2990.00 | 2945.00 | 44.54 | 0.00 | 0.00 |
| 195 | 2 | 6 | 1313.00 | 1269.00 | 44.54 | 0.00 | 0.00 |
| 195 | 15 | 24 | 2749.00 | 2733.00 | 16.59 | 0.00 | 0.00 |
| 195 | 17 | 9 | 1352.00 | 1333.00 | 18.34 | 0.00 | 0.00 |
| 195 | 18 | 21 | 1522.00 | 1455.00 | 67.25 | 0.00 | 0.00 |
| 195 | 19 | 18 | 1336.00 | 1318.00 | 18.34 | 0.00 | 0.00 |
| 195 | 20 | 3 | 1629.00 | 1582.00 | 47.16 | 0.00 | 0.00 |
| 195 | 20 | 6 | 3981.00 | 3922.00 | 58.95 | 0.00 | 0.00 |
| 195 | 23 | 18 | 1475.00 | 1441.00 | 34.06 | 0.00 | 0.00 |
| 195 | 28 | 21 | 1561.00 | 1494.00 | 66.37 | 0.00 | 0.00 |
| 195 | 29 | 24 | 2033.00 | 2003.00 | 29.69 | 0.00 | 0.00 |
| 195 | 31 | 6 | 2470.00 | 2461.00 | 8.73 | 0.00 | 0.00 |
| 195 | 31 | 9 | 1757.00 | 1757.00 | 0.00 | 0.00 | 0.00 |
| 195 | 32 | 3 | 1331.00 | 1258.00 | 52.40 | 20.70 | 2.91 |
| 195 | 40 | 21 | 2432.00 | 2432.00 | 0.00 | 0.00 | 0.00 |

| | | | | | | | |
|-----|-----|----|---------|---------|--------|--------|--------|
| 195 | 40 | 24 | 2272.00 | 2261.00 | 10.48 | 0.00 | 0.00 |
| 195 | 41 | 3 | 2453.00 | 2432.00 | 20.09 | 0.00 | 0.00 |
| 195 | 41 | 6 | 4335.00 | 4302.00 | 33.19 | 0.00 | 0.00 |
| 195 | 41 | 24 | 3380.00 | 3375.00 | 5.24 | 0.00 | 0.00 |
| 195 | 50 | 21 | 1375.00 | 1369.00 | 6.11 | 0.00 | 0.00 |
| 195 | 51 | 6 | 1381.00 | 1183.00 | 33.19 | 164.59 | -12.42 |
| 195 | 57 | 9 | 1991.00 | 1962.00 | 28.38 | 0.00 | 0.00 |
| 195 | 59 | 24 | 1999.00 | 1962.00 | 37.55 | 0.00 | 0.00 |
| 195 | 75 | 21 | 2393.00 | 2393.00 | 0.00 | 0.00 | 0.00 |
| 195 | 77 | 3 | 1704.00 | 1677.00 | 27.57 | 0.02 | 0.00 |
| 195 | 81 | 3 | 2788.00 | 2786.00 | 2.62 | 0.00 | 0.00 |
| 195 | 83 | 24 | 2110.00 | 2110.00 | 0.00 | 0.00 | 0.00 |
| 195 | 84 | 3 | 1603.00 | 1603.00 | 0.00 | 0.00 | 0.00 |
| 195 | 85 | 18 | 1362.00 | 1347.00 | 14.41 | 0.00 | 0.00 |
| 195 | 85 | 21 | 1301.00 | 1291.00 | 9.61 | 0.12 | 0.06 |
| 195 | 91 | 24 | 2700.00 | 2660.00 | 40.17 | 0.03 | 0.01 |
| 195 | 95 | 9 | 1494.00 | 1485.00 | 8.73 | 0.00 | 0.00 |
| 195 | 98 | 21 | 1791.00 | 1787.00 | 3.49 | 0.00 | 0.00 |
| 195 | 99 | 6 | 2316.00 | 2316.00 | 0.00 | 0.00 | 0.00 |
| 195 | 104 | 21 | 1997.00 | 1955.00 | 42.79 | 0.00 | 0.00 |
| 195 | 126 | 3 | 2683.00 | 2640.00 | 5.24 | 37.88 | -5.66 |
| 195 | 152 | 24 | 2526.00 | 2480.00 | 5.24 | 40.84 | 1.32 |
| 195 | 168 | 6 | 2541.00 | 2535.00 | 5.24 | 0.00 | 0.00 |
| 195 | 175 | 3 | 2647.00 | 2565.00 | 0.00 | 82.29 | -11.79 |
| 195 | 179 | 3 | 2037.00 | 2027.00 | 10.48 | 0.00 | 0.00 |
| 195 | 185 | 3 | 1460.00 | 1382.00 | 5.24 | 72.86 | -3.67 |
| 195 | 190 | 21 | 1408.00 | 1405.00 | 3.49 | 0.00 | 0.00 |
| 195 | 217 | 21 | 1349.00 | 1330.00 | 19.21 | 0.00 | 0.00 |
| 195 | 228 | 3 | 3489.00 | 3476.00 | 12.23 | 0.00 | 0.00 |
| 195 | 228 | 21 | 1651.00 | 1651.00 | 0.00 | 0.00 | 0.00 |
| 195 | 237 | 3 | 1430.00 | 1312.00 | 18.34 | 99.21 | -12.48 |
| 195 | 237 | 21 | 2049.00 | 2039.00 | 10.48 | 0.00 | 0.00 |
| 195 | 261 | 3 | 1516.00 | 1379.00 | 46.29 | 90.55 | -8.15 |
| 195 | 266 | 21 | 1700.00 | 1701.00 | 0.00 | 0.00 | 0.00 |
| 195 | 270 | 18 | 1406.00 | 1367.00 | 39.30 | 0.00 | 0.00 |
| 195 | 273 | 18 | 1672.00 | 1646.00 | 26.20 | 0.00 | 0.00 |
| 195 | 274 | 18 | 1430.00 | 1413.00 | 16.59 | 0.00 | 0.00 |
| 195 | 276 | 24 | 2542.00 | 2534.00 | 8.73 | 0.00 | 0.00 |
| 195 | 277 | 24 | 4004.00 | 3999.00 | 5.24 | 0.00 | 0.00 |
| 195 | 278 | 3 | 2185.00 | 2165.00 | 20.96 | 0.00 | 0.00 |
| 195 | 287 | 18 | 1513.00 | 1491.00 | 21.45 | 0.00 | 0.00 |
| 195 | 288 | 18 | 1419.00 | 1362.00 | 57.64 | 0.00 | 0.00 |
| 195 | 290 | 3 | 1343.00 | 1293.00 | 50.65 | 0.00 | 0.00 |
| 195 | 290 | 6 | 1586.00 | 1526.00 | 60.26 | 0.00 | 0.00 |
| 195 | 290 | 18 | 1632.00 | 1573.00 | 59.39 | 0.00 | 0.00 |
| 195 | 299 | 21 | 3641.00 | 3575.00 | 7.86 | 58.47 | -8.94 |
| 195 | 300 | 3 | 1829.00 | 1742.00 | 86.46 | 0.00 | 0.00 |
| 195 | 311 | 6 | 2453.00 | 2436.00 | 17.20 | 0.00 | 0.00 |
| 195 | 311 | 21 | 2526.00 | 2523.00 | 2.62 | 0.00 | 0.00 |
| 195 | 336 | 24 | 2662.00 | 2629.00 | 33.19 | 0.00 | 0.00 |
| 195 | 340 | 3 | 1566.00 | 1523.00 | 42.79 | 0.00 | 0.00 |
| 195 | 340 | 6 | 1383.00 | 1320.00 | 62.01 | 0.00 | 0.00 |
| 195 | 340 | 18 | 1821.00 | 1790.00 | 31.44 | 0.00 | 0.00 |
| 195 | 340 | 21 | 2254.00 | 2197.00 | 56.77 | 0.00 | 0.00 |
| 195 | 343 | 6 | 2865.00 | 2724.00 | 25.33 | 115.52 | 21.06 |
| 195 | 348 | 6 | 2448.00 | 2421.00 | 27.95 | 0.00 | 0.00 |
| 195 | 350 | 18 | 1502.00 | 1496.00 | 6.11 | 0.00 | 0.00 |
| 195 | 352 | 18 | 1324.00 | 1319.00 | 5.24 | 0.00 | 0.00 |
| 195 | 363 | 21 | 2750.00 | 2726.00 | 24.45 | 0.00 | 0.00 |
| 195 | 363 | 24 | 1821.00 | 1754.00 | 66.37 | 0.00 | 0.00 |
| 195 | 364 | 6 | 2667.00 | 2628.00 | 39.30 | 0.00 | 0.00 |
| 195 | 364 | 24 | 1305.00 | 1147.00 | 158.10 | 0.00 | 0.00 |
| 195 | 365 | 3 | 1811.00 | 1643.00 | 168.60 | 0.00 | 0.00 |
| 204 | 28 | 24 | 1799.00 | 1603.00 | 91.70 | 104.16 | 18.55 |
| 204 | 131 | 24 | 1480.00 | 1477.00 | 3.49 | 0.00 | 0.00 |
| 204 | 226 | 24 | 1313.00 | 1295.00 | 18.34 | 0.00 | 0.00 |
| 204 | 279 | 3 | 1606.00 | 1603.00 | 2.62 | 0.00 | 0.00 |
| 204 | 311 | 24 | 1720.00 | 1712.00 | 8.73 | 0.00 | 0.00 |
| 205 | 15 | 24 | 1488.00 | 1471.00 | 16.59 | 0.00 | 0.00 |
| 205 | 20 | 6 | 2252.00 | 2193.00 | 58.95 | 0.00 | 0.00 |
| 205 | 41 | 3 | 1301.00 | 1281.00 | 20.09 | 0.00 | 0.00 |
| 205 | 41 | 6 | 2314.00 | 2281.00 | 33.19 | 0.00 | 0.00 |
| 205 | 41 | 24 | 1779.00 | 1774.00 | 5.24 | 0.00 | 0.00 |
| 205 | 81 | 3 | 1561.00 | 1476.00 | 2.62 | 82.56 | 10.16 |
| 205 | 91 | 24 | 1597.00 | 1425.00 | 40.17 | 131.07 | -17.81 |
| 205 | 126 | 3 | 1499.00 | 1423.00 | 5.24 | 70.93 | -11.36 |
| 205 | 168 | 6 | 1475.00 | 1470.00 | 5.24 | 0.00 | 0.00 |
| 205 | 175 | 3 | 1613.00 | 1533.00 | 0.00 | 80.08 | -11.71 |
| 205 | 209 | 24 | 1607.00 | 1495.00 | 2.62 | 110.11 | -13.85 |
| 205 | 249 | 3 | 1509.00 | 1492.00 | 17.40 | 0.00 | 0.00 |
| 205 | 261 | 6 | 1396.00 | 1228.00 | 35.81 | 131.85 | 15.80 |
| 205 | 276 | 24 | 1480.00 | 1471.00 | 8.73 | 0.00 | 0.00 |
| 205 | 277 | 24 | 1480.00 | 1475.00 | 5.24 | 0.12 | 0.01 |
| 205 | 299 | 21 | 1969.00 | 1908.00 | 7.86 | 54.15 | -8.21 |
| 205 | 311 | 6 | 1305.00 | 1288.00 | 17.20 | 0.00 | 0.00 |
| 205 | 311 | 21 | 1467.00 | 1464.00 | 2.62 | 0.00 | 0.00 |
| 205 | 336 | 24 | 2155.00 | 2122.00 | 33.19 | 0.00 | 0.00 |
| 205 | 343 | 6 | 1609.00 | 1472.00 | 25.33 | 111.97 | 13.07 |
| 205 | 352 | 3 | 1517.00 | 1486.00 | 30.57 | 0.00 | 0.00 |
| 205 | 363 | 21 | 1500.00 | 1476.00 | 24.45 | 0.00 | 0.00 |

| | | | | | | | |
|-----|-----|----|---------|---------|-------|--------|--------|
| 205 | 364 | 6 | 1462.00 | 1423.00 | 39.30 | 0.00 | 0.00 |
| 208 | 20 | 6 | 1533.00 | 1474.00 | 58.95 | 0.00 | 0.00 |
| 208 | 41 | 6 | 1552.00 | 1519.00 | 33.19 | 0.00 | 0.00 |
| 208 | 228 | 3 | 1325.00 | 1247.00 | 12.23 | 66.15 | -5.81 |
| 208 | 277 | 24 | 1523.00 | 1439.00 | 5.24 | 78.68 | -13.19 |
| 208 | 348 | 6 | 1721.00 | 1694.00 | 27.95 | 0.00 | 0.00 |
| 242 | 85 | 3 | 1646.00 | 1634.00 | 12.66 | 0.00 | 0.00 |
| 242 | 171 | 24 | 1376.00 | 1375.00 | 1.75 | 0.00 | 0.00 |
| 242 | 180 | 6 | 1313.00 | 1312.00 | 1.75 | 0.00 | 0.00 |
| 242 | 197 | 6 | 1500.00 | 1490.00 | 9.17 | 0.00 | 0.00 |
| 243 | 2 | 9 | 1678.00 | 1633.00 | 44.54 | 0.00 | 0.00 |
| 243 | 19 | 24 | 1689.00 | 1625.00 | 64.19 | 0.00 | 0.00 |
| 243 | 31 | 24 | 1677.00 | 1625.00 | 51.09 | 0.00 | 0.00 |
| 243 | 37 | 9 | 1695.00 | 1682.00 | 13.10 | 0.00 | 0.00 |
| 243 | 37 | 21 | 1632.00 | 1624.00 | 7.86 | 0.00 | 0.00 |
| 243 | 38 | 24 | 1576.00 | 1575.00 | 0.00 | 0.00 | 0.00 |
| 243 | 42 | 21 | 1612.00 | 1602.00 | 10.48 | 0.00 | 0.00 |
| 243 | 226 | 21 | 1664.00 | 1640.00 | 23.58 | 0.00 | 0.00 |
| 243 | 298 | 6 | 1564.00 | 1564.00 | 0.00 | 0.00 | 0.00 |
| 243 | 298 | 24 | 1635.00 | 1629.00 | 5.24 | 0.00 | 0.00 |
| 243 | 341 | 3 | 1599.00 | 1547.00 | 52.40 | 0.00 | 0.00 |
| 244 | 2 | 3 | 1922.00 | 1877.00 | 44.54 | 0.00 | 0.00 |
| 244 | 40 | 21 | 1428.00 | 1428.00 | 0.00 | 0.00 | 0.00 |
| 244 | 41 | 6 | 1447.00 | 1414.00 | 33.19 | 0.00 | 0.00 |
| 244 | 126 | 3 | 1723.00 | 1629.00 | 5.24 | 88.25 | -8.61 |
| 244 | 164 | 3 | 1459.00 | 1382.00 | 10.48 | 65.90 | -3.65 |
| 244 | 278 | 6 | 1632.00 | 1525.00 | 27.07 | 80.11 | -5.31 |
| 246 | 20 | 6 | 1406.00 | 1347.00 | 58.95 | 0.00 | 0.00 |
| 246 | 36 | 18 | 1819.00 | 1809.00 | 9.61 | 0.00 | 0.00 |
| 246 | 343 | 3 | 1344.00 | 1074.00 | 8.73 | 261.88 | 2.31 |
| 247 | 1 | 24 | 1821.00 | 1769.00 | 51.53 | 0.00 | 0.00 |
| 247 | 35 | 21 | 1905.00 | 1838.00 | 12.23 | 54.77 | 7.05 |
| 247 | 36 | 21 | 1911.00 | 1903.00 | 7.86 | 0.00 | 0.00 |
| 247 | 99 | 24 | 1439.00 | 1422.00 | 16.59 | 0.00 | 0.00 |
| 247 | 115 | 3 | 1912.00 | 1852.00 | 20.09 | 39.80 | 1.30 |
| 247 | 119 | 21 | 1309.00 | 1289.00 | 20.09 | 0.00 | 0.00 |
| 247 | 151 | 24 | 1422.00 | 1378.00 | 37.55 | 6.50 | 0.81 |
| 247 | 216 | 21 | 1387.00 | 1369.00 | 18.34 | 0.00 | 0.00 |
| 247 | 276 | 24 | 1460.00 | 1451.00 | 8.73 | 0.00 | 0.00 |

| REC | JDAY | HR | EXCEEDENCE | P | BCK | URC | URCNET |
|-----|------|----|------------|---------|-------|--------|--------|
| 57 | 38 | 24 | 388.10 | 43.04 | 5.02 | 339.98 | -6.70 |
| 76 | 97 | 24 | 368.70 | 137.90 | 2.78 | 228.03 | -13.85 |
| 85 | 97 | 24 | 389.30 | 134.50 | 2.78 | 252.04 | -6.66 |
| 85 | 281 | 24 | 438.80 | 141.30 | 12.88 | 284.63 | -14.17 |
| 86 | 281 | 24 | 367.70 | 150.20 | 12.88 | 204.55 | -13.58 |
| 156 | 69 | 24 | 403.20 | 388.80 | 14.30 | 0.10 | 0.05 |
| 164 | 69 | 24 | 487.00 | 472.60 | 14.30 | 0.10 | 0.05 |
| 169 | 69 | 24 | 568.90 | 554.60 | 14.30 | 0.01 | 0.00 |
| 169 | 71 | 24 | 384.60 | 365.20 | 19.38 | 0.00 | 0.00 |
| 173 | 69 | 24 | 467.70 | 453.30 | 14.30 | 0.10 | 0.00 |
| 173 | 71 | 24 | 376.40 | 357.00 | 19.38 | 0.00 | 0.00 |
| 173 | 157 | 24 | 374.10 | 373.80 | 0.27 | 0.00 | 0.00 |
| 173 | 180 | 24 | 383.00 | 372.50 | 3.98 | 6.49 | -1.29 |
| 173 | 206 | 24 | 376.00 | 327.40 | 48.59 | 0.00 | 0.00 |
| 173 | 230 | 24 | 545.10 | 543.80 | 1.36 | 0.00 | 0.00 |
| 173 | 231 | 24 | 410.30 | 410.30 | 0.00 | 0.07 | 0.03 |
| 176 | 61 | 24 | 486.90 | 473.50 | 13.37 | 0.04 | 0.00 |
| 176 | 106 | 24 | 505.50 | 501.70 | 3.77 | 0.00 | 0.00 |
| 176 | 195 | 24 | 485.90 | 477.50 | 8.46 | 0.00 | 0.00 |
| 177 | 45 | 24 | 425.80 | 412.60 | 10.43 | 2.73 | -0.35 |
| 177 | 48 | 24 | 391.10 | 383.30 | 7.04 | 0.69 | 0.39 |
| 177 | 49 | 24 | 387.30 | 380.80 | 6.49 | 0.00 | 0.00 |
| 177 | 58 | 24 | 437.60 | 427.70 | 9.85 | 0.00 | 0.00 |
| 177 | 69 | 24 | 542.00 | 527.00 | 14.30 | 0.68 | -0.01 |
| 177 | 71 | 24 | 529.20 | 509.80 | 19.38 | 0.00 | 0.00 |
| 177 | 88 | 24 | 454.30 | 428.60 | 11.35 | 14.41 | -2.07 |
| 177 | 105 | 24 | 486.00 | 459.80 | 26.25 | 0.00 | 0.00 |
| 177 | 112 | 24 | 548.00 | 536.50 | 11.57 | 0.00 | 0.00 |
| 177 | 116 | 24 | 387.50 | 380.30 | 7.10 | 0.00 | 0.00 |
| 177 | 119 | 24 | 509.00 | 489.60 | 19.43 | 0.00 | 0.00 |
| 177 | 157 | 24 | 593.10 | 581.70 | 0.27 | 11.08 | -1.59 |
| 177 | 180 | 24 | 378.20 | 374.20 | 3.98 | 0.00 | 0.00 |
| 177 | 205 | 24 | 415.50 | 405.50 | 10.02 | 0.00 | 0.00 |
| 177 | 206 | 24 | 548.30 | 499.60 | 48.59 | 0.10 | 0.04 |
| 177 | 230 | 24 | 853.10 | 851.80 | 1.36 | 0.00 | 0.00 |
| 177 | 231 | 24 | 641.70 | 640.70 | 0.00 | 1.01 | 0.32 |
| 177 | 233 | 24 | 389.30 | 342.10 | 47.16 | 0.00 | 0.00 |
| 177 | 241 | 24 | 428.10 | 407.60 | 6.67 | 13.80 | 0.10 |
| 177 | 293 | 24 | 399.40 | 362.50 | 33.84 | 3.10 | 0.03 |
| 177 | 327 | 24 | 409.00 | 393.00 | 15.99 | 0.04 | 0.01 |
| 182 | 24 | 24 | 687.80 | 592.30 | 95.47 | 0.00 | 0.00 |
| 182 | 33 | 24 | 601.80 | 583.00 | 4.91 | 13.57 | 0.06 |
| 182 | 34 | 24 | 1110.00 | 1090.00 | 20.03 | 0.00 | 0.00 |
| 182 | 35 | 24 | 689.90 | 662.90 | 9.88 | 17.39 | -0.47 |
| 182 | 45 | 24 | 482.50 | 455.30 | 10.43 | 16.78 | 0.98 |
| 182 | 46 | 24 | 460.60 | 434.90 | 9.17 | 16.46 | -0.27 |
| 182 | 48 | 24 | 452.10 | 443.90 | 7.04 | 1.12 | 0.93 |
| 182 | 49 | 24 | 439.40 | 432.90 | 6.49 | 0.00 | 0.00 |
| 182 | 58 | 24 | 932.70 | 922.90 | 9.85 | 0.00 | 0.00 |
| 182 | 68 | 24 | 900.10 | 876.20 | 24.07 | 0.00 | 0.00 |
| 182 | 69 | 24 | 2780.00 | 2764.00 | 14.30 | 2.35 | -0.10 |
| 182 | 71 | 24 | 1619.00 | 1599.00 | 19.38 | 0.00 | 0.00 |
| 182 | 88 | 24 | 792.60 | 781.20 | 11.35 | 0.00 | 0.00 |
| 182 | 89 | 24 | 440.40 | 417.20 | 13.54 | 9.67 | -0.65 |
| 182 | 90 | 24 | 1031.00 | 1019.00 | 11.46 | 0.00 | 0.00 |
| 182 | 99 | 24 | 698.80 | 696.10 | 2.40 | 0.00 | 0.00 |
| 182 | 105 | 24 | 975.50 | 949.10 | 26.25 | 0.00 | 0.00 |
| 182 | 108 | 24 | 848.50 | 836.00 | 12.17 | 0.00 | 0.00 |
| 182 | 112 | 24 | 1537.00 | 1526.00 | 11.57 | 0.00 | 0.00 |
| 182 | 114 | 24 | 1115.00 | 1090.00 | 25.44 | 0.00 | 0.00 |
| 182 | 115 | 24 | 694.40 | 625.00 | 34.28 | 34.97 | -4.04 |
| 182 | 116 | 24 | 1117.00 | 1083.00 | 7.10 | 27.08 | 1.34 |
| 182 | 117 | 24 | 477.30 | 437.20 | 21.18 | 18.96 | -1.83 |
| 182 | 118 | 24 | 722.00 | 669.30 | 18.34 | 34.33 | -3.18 |
| 182 | 119 | 24 | 754.70 | 735.20 | 19.43 | 0.00 | 0.00 |
| 182 | 121 | 24 | 823.00 | 820.30 | 2.78 | 0.02 | 0.00 |
| 182 | 122 | 24 | 690.60 | 688.50 | 2.02 | 0.00 | 0.00 |
| 182 | 136 | 24 | 884.30 | 879.70 | 4.37 | 0.00 | 0.00 |
| 182 | 137 | 24 | 618.70 | 606.90 | 11.95 | 0.00 | 0.00 |
| 182 | 142 | 24 | 375.50 | 365.20 | 10.26 | 0.00 | 0.00 |
| 182 | 144 | 24 | 479.60 | 476.60 | 2.95 | 0.00 | 0.00 |
| 182 | 156 | 24 | 417.40 | 414.10 | 1.75 | 1.60 | 0.10 |
| 182 | 157 | 24 | 1379.00 | 1364.00 | 0.27 | 14.49 | -1.05 |
| 182 | 167 | 24 | 662.90 | 661.10 | 1.97 | 0.00 | 0.00 |
| 182 | 171 | 24 | 797.80 | 780.60 | 2.89 | 14.30 | -1.25 |
| 182 | 172 | 24 | 470.90 | 456.60 | 2.40 | 11.83 | 2.53 |
| 182 | 176 | 24 | 411.90 | 386.90 | 6.55 | 18.50 | -1.89 |
| 182 | 180 | 24 | 1418.00 | 1414.00 | 3.98 | 0.00 | 0.00 |
| 182 | 188 | 24 | 580.10 | 571.70 | 0.93 | 7.49 | -0.45 |
| 182 | 189 | 24 | 571.50 | 541.10 | 16.05 | 14.34 | -1.59 |
| 182 | 193 | 24 | 503.60 | 480.30 | 4.48 | 18.80 | -1.36 |
| 182 | 194 | 24 | 928.80 | 921.70 | 6.31 | 0.60 | -0.03 |
| 182 | 196 | 24 | 573.80 | 561.50 | 11.19 | 1.08 | 0.17 |
| 182 | 205 | 24 | 888.80 | 845.90 | 10.02 | 33.04 | -3.36 |
| 182 | 206 | 24 | 613.00 | 548.30 | 48.59 | 16.11 | -0.89 |
| 182 | 209 | 24 | 504.50 | 491.20 | 5.79 | 7.58 | -1.00 |
| 182 | 210 | 24 | 455.40 | 441.20 | 9.01 | 5.18 | -0.82 |
| 182 | 211 | 24 | 624.90 | 608.70 | 3.88 | 12.59 | -0.98 |

| | | | | | | | |
|-----|-----|----|---------|---------|--------|--------|--------|
| 182 | 222 | 24 | 398.60 | 357.70 | 40.14 | 0.70 | -0.12 |
| 182 | 223 | 24 | 373.20 | 345.00 | 17.71 | 10.46 | -1.29 |
| 182 | 230 | 24 | 1681.00 | 1680.00 | 1.36 | 0.00 | 0.00 |
| 182 | 231 | 24 | 903.60 | 889.10 | 0.00 | 14.31 | -0.36 |
| 182 | 233 | 24 | 1235.00 | 1188.00 | 47.16 | 0.00 | 0.00 |
| 182 | 241 | 24 | 613.90 | 591.70 | 6.67 | 15.30 | -1.53 |
| 182 | 258 | 24 | 525.10 | 524.50 | 0.58 | 0.00 | 0.00 |
| 182 | 282 | 24 | 494.20 | 462.10 | 31.55 | 0.53 | 0.09 |
| 182 | 292 | 24 | 672.30 | 638.40 | 15.43 | 18.31 | -2.03 |
| 182 | 293 | 24 | 1064.00 | 1017.00 | 33.84 | 13.27 | 3.14 |
| 182 | 318 | 24 | 518.20 | 461.60 | 39.63 | 16.92 | -1.85 |
| 182 | 326 | 24 | 743.40 | 731.10 | 9.06 | 3.48 | -0.09 |
| 182 | 328 | 24 | 403.80 | 302.30 | 49.18 | 52.33 | -5.18 |
| 182 | 345 | 24 | 571.50 | 556.20 | 15.28 | 0.00 | 0.00 |
| 182 | 356 | 24 | 430.70 | 412.10 | 14.68 | 3.99 | 0.32 |
| 182 | 365 | 24 | 537.70 | 465.10 | 63.48 | 9.10 | -0.75 |
| 195 | 2 | 24 | 565.00 | 526.80 | 38.21 | 0.00 | 0.00 |
| 195 | 15 | 24 | 462.50 | 452.10 | 10.37 | 0.00 | 0.00 |
| 195 | 18 | 24 | 450.40 | 341.50 | 64.35 | 44.60 | 0.53 |
| 195 | 20 | 24 | 708.30 | 687.90 | 20.20 | 0.00 | 0.00 |
| 195 | 31 | 24 | 747.70 | 735.20 | 12.77 | 0.00 | 0.00 |
| 195 | 40 | 24 | 588.00 | 586.50 | 1.31 | 0.00 | 0.00 |
| 195 | 41 | 24 | 1284.00 | 1266.00 | 18.01 | 0.00 | 0.00 |
| 195 | 75 | 24 | 430.10 | 422.20 | 7.86 | 0.00 | 0.00 |
| 195 | 81 | 24 | 387.70 | 348.20 | 9.61 | 29.94 | -2.00 |
| 195 | 175 | 24 | 382.50 | 320.50 | 7.10 | 54.85 | -7.26 |
| 195 | 228 | 24 | 681.40 | 640.70 | 39.09 | 1.42 | 0.12 |
| 195 | 237 | 24 | 612.40 | 582.40 | 17.58 | 12.40 | -1.56 |
| 195 | 276 | 24 | 374.00 | 316.70 | 15.50 | 41.81 | -2.21 |
| 195 | 277 | 24 | 546.60 | 500.40 | 13.75 | 32.38 | -3.94 |
| 195 | 290 | 24 | 606.10 | 548.90 | 56.98 | 0.25 | 0.01 |
| 195 | 297 | 24 | 510.90 | 508.10 | 2.84 | 0.00 | 0.00 |
| 195 | 299 | 24 | 463.60 | 446.90 | 9.39 | 7.31 | -1.12 |
| 195 | 310 | 24 | 402.30 | 378.90 | 22.85 | 0.47 | 0.29 |
| 195 | 311 | 24 | 628.50 | 619.70 | 8.69 | 0.00 | 0.00 |
| 195 | 340 | 24 | 945.10 | 886.70 | 58.30 | 0.00 | 0.00 |
| 195 | 343 | 24 | 393.80 | 355.30 | 11.62 | 26.79 | 1.42 |
| 195 | 363 | 24 | 577.60 | 566.30 | 11.35 | 0.00 | 0.00 |
| 195 | 364 | 24 | 612.60 | 471.80 | 101.20 | 39.61 | -3.38 |
| 204 | 28 | 24 | 378.70 | 226.10 | 30.02 | 122.64 | -5.68 |
| 204 | 37 | 24 | 467.20 | 437.20 | 9.61 | 20.38 | -1.60 |
| 204 | 207 | 24 | 368.80 | 159.20 | 45.63 | 163.90 | -10.22 |
| 204 | 279 | 24 | 394.70 | 345.00 | 20.52 | 29.22 | -1.05 |
| 204 | 280 | 24 | 368.20 | 313.00 | 7.53 | 47.73 | -3.38 |
| 204 | 311 | 24 | 434.80 | 425.50 | 8.69 | 0.59 | 0.20 |
| 204 | 335 | 24 | 374.30 | 368.50 | 5.84 | 0.00 | 0.00 |
| 204 | 344 | 24 | 427.80 | 425.20 | 2.62 | 0.00 | 0.00 |
| 205 | 20 | 24 | 398.20 | 378.00 | 20.20 | 0.00 | 0.00 |
| 205 | 41 | 24 | 769.70 | 751.50 | 18.01 | 0.00 | 0.00 |
| 205 | 290 | 24 | 369.40 | 290.70 | 56.98 | 21.73 | 1.51 |
| 205 | 340 | 24 | 463.60 | 405.30 | 58.30 | 0.00 | 0.00 |
| 205 | 364 | 24 | 403.30 | 253.50 | 101.20 | 48.60 | -5.14 |
| 207 | 37 | 24 | 512.50 | 482.10 | 9.61 | 20.73 | -1.41 |
| 207 | 298 | 24 | 433.80 | 432.80 | 1.09 | 0.00 | 0.00 |
| 208 | 41 | 24 | 516.90 | 498.80 | 18.01 | 0.00 | 0.00 |
| 208 | 340 | 24 | 373.40 | 313.40 | 58.30 | 1.75 | 0.00 |
| 210 | 37 | 24 | 430.90 | 382.70 | 9.61 | 38.57 | -3.12 |
| 210 | 298 | 24 | 373.00 | 372.00 | 1.09 | 0.00 | 0.00 |
| 214 | 37 | 24 | 380.90 | 331.70 | 9.61 | 39.61 | -2.18 |
| 242 | 35 | 24 | 388.10 | 378.20 | 9.88 | 0.06 | -0.01 |
| 242 | 69 | 24 | 405.10 | 390.80 | 14.30 | 0.01 | -0.04 |
| 242 | 114 | 24 | 419.20 | 387.10 | 25.44 | 6.62 | -1.10 |
| 242 | 193 | 24 | 370.60 | 366.10 | 4.48 | 0.00 | 0.00 |
| 243 | 2 | 24 | 371.00 | 332.80 | 38.21 | 0.00 | 0.00 |
| 243 | 31 | 24 | 530.70 | 518.00 | 12.77 | 0.00 | 0.00 |
| 243 | 37 | 24 | 566.90 | 557.20 | 9.61 | 0.00 | 0.00 |
| 243 | 38 | 24 | 701.40 | 696.10 | 5.02 | 0.00 | 0.00 |
| 243 | 261 | 24 | 443.30 | 361.50 | 25.65 | 56.19 | 2.23 |
| 243 | 297 | 24 | 514.80 | 511.80 | 2.84 | 0.12 | 0.06 |
| 243 | 298 | 24 | 806.80 | 805.70 | 1.09 | 0.00 | 0.00 |
| 244 | 2 | 24 | 459.10 | 420.90 | 38.21 | 0.00 | 0.00 |
| 244 | 31 | 24 | 400.20 | 387.40 | 12.77 | 0.00 | 0.00 |
| 244 | 41 | 24 | 441.00 | 423.00 | 18.01 | 0.00 | 0.00 |
| 244 | 297 | 24 | 410.40 | 392.60 | 2.84 | 15.04 | -0.07 |

| REC | JDAY | HR | EXCEEDENCE | P | BCK | URC | URCNET |
|-----|------|----|------------|--------|-------|-------|--------|
| 67 | 365 | 24 | 81.07 | 25.07 | 18.07 | 37.99 | -2.48 |
| 76 | 365 | 24 | 89.67 | 23.90 | 18.07 | 47.50 | -1.19 |
| 85 | 365 | 24 | 90.45 | 22.74 | 18.07 | 49.37 | 0.62 |
| 177 | 365 | 24 | 84.72 | 63.55 | 18.07 | 3.04 | -0.25 |
| 182 | 365 | 24 | 183.90 | 160.90 | 18.07 | 5.03 | -0.22 |
| 195 | 365 | 24 | 108.30 | 71.71 | 18.07 | 18.31 | -0.99 |
| 204 | 365 | 24 | 131.50 | 59.47 | 18.07 | 53.70 | -1.92 |
| 205 | 365 | 24 | 84.20 | 37.90 | 18.07 | 28.03 | -1.85 |
| 207 | 365 | 24 | 115.80 | 41.39 | 18.07 | 56.11 | -1.76 |
| 210 | 365 | 24 | 81.18 | 32.06 | 18.07 | 31.06 | -0.87 |
| 243 | 365 | 24 | 92.60 | 46.06 | 18.07 | 28.49 | -0.27 |
| 244 | 365 | 24 | 86.28 | 33.23 | 18.07 | 35.16 | -1.51 |

Appendix C

*CTSCREEN Summary of Maximum Predicted
Concentrations (SUMRE Files)*

STABLE/NEUTRAL - HILLS 1 and 2

SUMMARY FOR ALL STABLE HOURS

| REC # | CONC UG/M**3 | WD 15.0 | WS M/S 1.0 | SIGV M/S .30 | SIGW M/S .04 | DTHDZ DEG/M .035 | ZI M 50.0 | USTAR M/S .1 | EL M 5.0 |
|-------|--------------|---------|------------|--------------|--------------|------------------|-----------|--------------|----------|
| 117 | 1568.99 | | | | | | | | |

SUMMARY FOR ALL HOURS

| REC # | CONC UG/M**3 | 3HR | | 24HR | | ANNUAL UG/M**3 |
|-------|--------------|---------|---------|---------|--------|----------------|
| | | UG/M**3 | 1098.29 | UG/M**3 | 235.35 | |
| 117 | 1568.99 | | | | | 47.07 |

RECEPTOR SUMMARY FOR STABLE HOURS

| REC # | CONC UG/M**3 | WD | WS M/S | SIGV M/S | SIGW M/S | DTHDZ DEG/M | ZI M | USTAR M/S | EL M |
|-------|--------------|--------|--------|----------|----------|-------------|------|-----------|------|
| 1 | 113.08 | 80.0 | 4.0 | .75 | .75 | .020 | 50.0 | .1 | 5.0 |
| 2 | 147.82 | 100.0 | 1.0 | .75 | .75 | .035 | 50.0 | .1 | 5.0 |
| 3 | 147.64 | 110.0 | 1.0 | .75 | .75 | .035 | 50.0 | .1 | 5.0 |
| 4 | 139.33 | 110.0 | 1.0 | .75 | .75 | .035 | 50.0 | .1 | 5.0 |
| 5 | 144.71 | 100.0 | 1.0 | .75 | .75 | .035 | 50.0 | .1 | 5.0 |
| 6 | 158.99 | 100.0 | 1.0 | .75 | .75 | .035 | 50.0 | .1 | 5.0 |
| 7 | 145.69 | 90.0 | 1.0 | .75 | .75 | .035 | 50.0 | .1 | 5.0 |
| 8 | 100.74 | 90.0 | 1.0 | .75 | .75 | .035 | 50.0 | .1 | 5.0 |
| 9 | 128.64 | 75.0 | 4.0 | .30 | .15 | .020 | 50.0 | .1 | 5.0 |
| 10 | 136.64 | 50.0 | 1.0 | .75 | .75 | .035 | 50.0 | .1 | 5.0 |
| 11 | 142.72 | 60.0 | 1.0 | .75 | .75 | .035 | 50.0 | .1 | 5.0 |
| 12 | 336.81 | 80.0 | 4.0 | .30 | .30 | .035 | 50.0 | .1 | 5.0 |
| 13 | 339.58 | 75.0 | 4.0 | .30 | .15 | .035 | 50.0 | .1 | 5.0 |
| 14 | 276.95 | 100.0 | 4.0 | .30 | .30 | .035 | 50.0 | .1 | 5.0 |
| 15 | 373.17 | 90.0 | 4.0 | .30 | .30 | .035 | 50.0 | .1 | 5.0 |
| 16 | 366.36 | 110.0 | 4.0 | .30 | .30 | .035 | 50.0 | .1 | 5.0 |
| 17 | 435.91 | 40.0 | 4.0 | .30 | .30 | .035 | 50.0 | .1 | 5.0 |
| 18 | 389.25 | 70.0 | 4.0 | .30 | .30 | .035 | 50.0 | .1 | 5.0 |
| 19 | 254.67 | 70.0 | 4.0 | .30 | .15 | .035 | 50.0 | .1 | 5.0 |
| 20 | 605.56 | 80.0 | 3.0 | .30 | .08 | .035 | 50.0 | .1 | 5.0 |
| 21 | 677.69 | 80.0 | 3.0 | .30 | .08 | .035 | 50.0 | .1 | 5.0 |
| 22 | 595.99 | 80.0 | 3.0 | .30 | .08 | .035 | 50.0 | .1 | 5.0 |
| 23 | 692.28 | 90.0 | 3.0 | .30 | .08 | .035 | 50.0 | .1 | 5.0 |
| 24 | 672.62 | 90.0 | 3.0 | .30 | .08 | .035 | 50.0 | .1 | 5.0 |
| 25 | 701.72 | 100.0 | 3.0 | .30 | .08 | .035 | 50.0 | .1 | 5.0 |
| 26 | 1068.33 | 80.0 | 3.0 | .30 | .15 | .035 | 50.0 | .1 | 5.0 |
| 27 | 1029.69 | 60.0 | 3.0 | .30 | .08 | .035 | 50.0 | .1 | 5.0 |
| 28 | 997.03 | 50.0 | 3.0 | .30 | .08 | .035 | 50.0 | .1 | 5.0 |
| 29 | 811.59 | 80.0 | 3.0 | .30 | .15 | .035 | 50.0 | .1 | 5.0 |
| 30 | 736.29 | 75.0 | 3.0 | .30 | .15 | .035 | 50.0 | .1 | 5.0 |
| 31 | 700.55 | 75.0 | 3.0 | .30 | .15 | .035 | 50.0 | .1 | 5.0 |
| 32 | 532.53 | 50.0 | 3.0 | .30 | .08 | .035 | 50.0 | .1 | 5.0 |
| 33 | 518.75 | 70.0 | 3.0 | .30 | .08 | .035 | 50.0 | .1 | 5.0 |
| 34 | 753.10 | 80.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 35 | 918.34 | 80.0 | 2.0 | .30 | .08 | .035 | 50.0 | .1 | 5.0 |
| 36 | 984.24 | 80.0 | 2.0 | .30 | .15 | .035 | 50.0 | .1 | 5.0 |
| 37 | 1029.87 | 90.0 | 2.0 | .30 | .15 | .035 | 50.0 | .1 | 5.0 |
| 38 | 1056.73 | 90.0 | 2.0 | .30 | .15 | .035 | 50.0 | .1 | 5.0 |
| 39 | 1201.42 | 80.0 | 2.0 | .30 | .15 | .035 | 50.0 | .1 | 5.0 |
| 40 | 1292.31 | 70.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 41 | 1175.25 | 70.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 42 | 1138.24 | 75.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 43 | 1042.27 | 75.0 | 2.0 | .30 | .15 | .035 | 50.0 | .1 | 5.0 |
| 44 | 1067.48 | 75.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 45 | 1006.03 | 70.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 46 | 959.76 | 75.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 47 | 1158.37 | 80.0 | 1.0 | .30 | .15 | .035 | 50.0 | .1 | 5.0 |
| 48 | 1143.43 | 90.0 | 1.0 | .30 | .15 | .035 | 50.0 | .1 | 5.0 |
| 49 | 1127.55 | 75.0 | 1.0 | .30 | .15 | .035 | 50.0 | .1 | 5.0 |
| 50 | 1161.77 | 80.0 | 1.0 | .30 | .15 | .035 | 50.0 | .1 | 5.0 |
| 51 | 1040.12 | 80.0 | 1.0 | .30 | .15 | .035 | 50.0 | .1 | 5.0 |
| 52 | 1042.25 | 70.0 | 1.0 | .30 | .15 | .035 | 50.0 | .1 | 5.0 |
| 53 | 770.41 | 75.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 54 | 787.68 | 75.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 55 | 193.40 | 35.0 | 1.0 | .75 | .75 | .035 | 50.0 | .1 | 5.0 |
| 56 | 215.17 | 30.0 | 3.0 | .30 | .08 | .035 | 50.0 | .1 | 5.0 |
| 57 | 306.55 | 30.0 | 3.0 | .30 | .08 | .035 | 50.0 | .1 | 5.0 |
| 58 | 599.31 | 30.0 | 3.0 | .30 | .08 | .035 | 50.0 | .1 | 5.0 |
| 59 | 715.84 | 30.0 | 4.0 | .30 | .15 | .035 | 50.0 | .1 | 5.0 |
| 60 | 568.05 | 30.0 | 4.0 | .30 | .15 | .035 | 50.0 | .1 | 5.0 |
| 61 | 427.63 | 30.0 | 4.0 | .30 | .15 | .035 | 50.0 | .1 | 5.0 |
| 62 | 235.07 | 30.0 | 4.0 | .30 | .15 | .035 | 50.0 | .1 | 5.0 |
| 63 | 170.61 | 360.00 | 1.0 | .75 | .75 | .035 | 50.0 | .1 | 5.0 |
| 64 | 153.75 | 330.00 | 1.0 | .75 | .75 | .035 | 50.0 | .1 | 5.0 |
| 65 | 136.62 | 360.00 | 1.0 | .30 | .30 | .035 | 50.0 | .1 | 5.0 |
| 66 | 119.41 | 10.00 | 1.0 | .30 | .30 | .035 | 50.0 | .1 | 5.0 |
| 67 | 87.13 | 20.00 | 1.0 | .30 | .30 | .035 | 50.0 | .1 | 5.0 |
| 68 | 83.31 | 15.00 | 1.0 | .75 | .75 | .035 | 50.0 | .1 | 5.0 |
| 69 | 132.13 | 30.00 | 1.0 | .30 | .30 | .035 | 50.0 | .1 | 5.0 |
| 70 | 147.28 | 30.00 | 2.0 | .75 | .75 | .035 | 50.0 | .1 | 5.0 |
| 71 | 318.07 | 30.00 | 2.0 | .30 | .30 | .035 | 50.0 | .1 | 5.0 |
| 72 | 355.52 | 30.00 | 2.0 | .30 | .30 | .035 | 50.0 | .1 | 5.0 |

| | | | | | | | |
|-----|---------|-------|-----|-----|-----|------|------|
| 73 | 391.41 | 30.0 | 2.0 | .30 | .30 | .035 | .0 |
| 74 | 603.30 | 30.0 | 1.0 | .30 | .04 | .035 | .0 |
| 75 | 599.14 | 360.0 | 5.0 | .30 | .30 | .035 | .0 |
| 76 | 613.63 | 320.0 | 5.0 | .30 | .30 | .035 | .0 |
| 77 | 439.44 | 320.0 | 5.0 | .30 | .30 | .035 | .0 |
| 78 | 381.38 | 350.0 | 1.0 | .30 | .30 | .035 | .0 |
| 79 | 286.50 | 360.0 | 5.0 | .30 | .30 | .035 | .0 |
| 80 | 281.23 | 10.0 | 5.0 | .30 | .15 | .035 | .0 |
| 81 | 295.15 | 15.0 | 5.0 | .30 | .30 | .035 | .0 |
| 82 | 249.40 | 25.0 | 5.0 | .30 | .30 | .035 | .0 |
| 83 | 344.31 | 30.0 | 5.0 | .30 | .08 | .035 | .0 |
| 84 | 780.59 | 30.0 | 3.0 | .30 | .08 | .035 | .0 |
| 85 | 860.19 | 30.0 | 3.0 | .30 | .15 | .035 | .0 |
| 86 | 890.57 | 30.0 | 3.0 | .30 | .08 | .035 | .0 |
| 87 | 983.75 | 360.0 | 4.0 | .30 | .15 | .035 | .0 |
| 88 | 1090.40 | 25.0 | 3.0 | .30 | .08 | .035 | .0 |
| 89 | 1109.05 | 330.0 | 4.0 | .30 | .15 | .035 | .0 |
| 90 | 1074.49 | 330.0 | 4.0 | .30 | .08 | .035 | .0 |
| 91 | 706.25 | 25.0 | 3.0 | .30 | .15 | .035 | .0 |
| 92 | 593.95 | 10.0 | 4.0 | .30 | .15 | .035 | .0 |
| 93 | 588.93 | 360.0 | 4.0 | .30 | .08 | .035 | .0 |
| 94 | 560.94 | 20.0 | 4.0 | .30 | .15 | .035 | .0 |
| 95 | 652.42 | 30.0 | 3.0 | .30 | .08 | .035 | .0 |
| 96 | 1012.41 | 30.0 | 1.0 | .30 | .04 | .035 | .0 |
| 97 | 1061.76 | 30.0 | 1.0 | .30 | .04 | .035 | .0 |
| 98 | 1102.33 | 30.0 | 1.0 | .30 | .04 | .035 | .0 |
| 99 | 1084.29 | 30.0 | 1.0 | .30 | .04 | .035 | .0 |
| 100 | 1127.93 | 25.0 | 1.0 | .30 | .04 | .035 | .0 |
| 101 | 1496.59 | 25.0 | 1.0 | .30 | .04 | .035 | .0 |
| 102 | 1190.20 | 25.0 | 1.0 | .30 | .04 | .035 | .0 |
| 103 | 1228.44 | 330.0 | 3.0 | .30 | .08 | .035 | .0 |
| 104 | 1152.27 | 330.0 | 2.0 | .30 | .04 | .020 | .0 |
| 105 | 1074.50 | 10.0 | 1.0 | .30 | .04 | .035 | .0 |
| 106 | 1076.62 | 360.0 | 2.0 | .30 | .04 | .035 | .0 |
| 107 | 1079.07 | 10.0 | 1.0 | .30 | .04 | .035 | .0 |
| 108 | 1090.36 | 360.0 | 2.0 | .30 | .04 | .035 | .0 |
| 109 | 1115.01 | 360.0 | 2.0 | .30 | .04 | .035 | .0 |
| 110 | 1115.68 | 360.0 | 2.0 | .30 | .04 | .035 | .0 |
| 111 | 951.98 | 360.0 | 2.0 | .30 | .04 | .035 | .0 |
| 112 | 1288.99 | 10.0 | 2.0 | .30 | .04 | .035 | .0 |
| 113 | 947.63 | 30.0 | 1.0 | .30 | .04 | .035 | .0 |
| 114 | 1482.24 | 25.0 | 1.0 | .30 | .04 | .035 | .0 |
| 115 | 1501.77 | 25.0 | 1.0 | .30 | .04 | .035 | .0 |
| 116 | 1545.22 | 25.0 | 1.0 | .30 | .04 | .035 | .0 |
| 117 | 1568.99 | 15.0 | 1.0 | .30 | .04 | .035 | .0 |
| 118 | 1499.38 | 15.0 | 1.0 | .30 | .04 | .035 | .0 |
| 119 | 1228.83 | 10.0 | 1.0 | .30 | .04 | .035 | .0 |
| 120 | 1406.91 | 10.0 | 1.0 | .30 | .04 | .035 | .0 |
| 121 | 1284.17 | 360.0 | 1.0 | .30 | .30 | .035 | .0 |
| 122 | 858.20 | 30.0 | 1.0 | .30 | .30 | .035 | .0 |
| 123 | 853.29 | 15.0 | 1.0 | .30 | .30 | .035 | .0 |
| 124 | 824.00 | 20.0 | 1.0 | .30 | .04 | .035 | 50.0 |

CTSCREEN SUMMARY
UNSTABLE - HILL 1

SUMMARY FOR ALL UNSTABLE HOURS

| REC # | CONC UG/M**3 | WD | WS M/S | SIGV M/S | SIGW M/S | DTHDZ DEG/M | ZI M | USTAR M/S | EL M |
|-------|--------------|------|--------|----------|----------|-------------|-------|-----------|-------|
| 48 | 1591.91 | 90.0 | 1.0 | -999.90 | -999.00 | .000 | 178.0 | .1 | -90.0 |

SUMMARY FOR ALL HOURS

| REC # | CONC UG/M**3 | 3HR UG/M**3 | 24HR UG/M**3 | ANNUAL UG/M**3 |
|-------|--------------|-------------|--------------|----------------|
| 48 | 1591.91 | 1114.34 | 238.79 | 47.76 |

RECEPTOR SUMMARY FOR UNSTABLE HOURS

| REC # | CONC UG/M**3 | WD | WS M/S | SIGV M/S | SIGW M/S | DTHDZ DEG/M | ZI M | USTAR M/S | EL M |
|-------|--------------|-------|--------|----------|----------|-------------|-------|-----------|-------|
| 1 | 786.75 | 80.0 | 1.0 | -999.90 | -999.00 | .000 | 267.0 | .1 | -50.0 |
| 2 | 1039.75 | 80.0 | 1.0 | -999.90 | -999.00 | .000 | 267.0 | .1 | -50.0 |
| 3 | 1209.39 | 90.0 | 1.0 | -999.90 | -999.00 | .000 | 267.0 | .1 | -90.0 |
| 4 | 907.94 | 100.0 | 1.0 | -999.90 | -999.00 | .000 | 178.0 | .1 | -50.0 |
| 5 | 1155.84 | 110.0 | 1.0 | -999.90 | -999.00 | .000 | 178.0 | .1 | -90.0 |
| 6 | 1257.03 | 110.0 | 1.0 | -999.90 | -999.00 | .000 | 178.0 | .1 | -90.0 |
| 7 | 1123.97 | 100.0 | 1.0 | -999.90 | -999.00 | .000 | 178.0 | .1 | -10.0 |
| 8 | 792.61 | 100.0 | 1.0 | -999.90 | -999.00 | .000 | 178.0 | .3 | -90.0 |
| 9 | 642.42 | 70.0 | 1.0 | -999.90 | -999.00 | .000 | 178.0 | .3 | -50.0 |
| 10 | 621.12 | 60.0 | 1.0 | -999.90 | -999.00 | .000 | 178.0 | .1 | -10.0 |
| 11 | 652.82 | 60.0 | 1.0 | -999.90 | -999.00 | .000 | 178.0 | .1 | -90.0 |
| 12 | 899.24 | 80.0 | 1.0 | -999.90 | -999.00 | .000 | 267.0 | .1 | -50.0 |
| 13 | 1167.33 | 80.0 | 1.0 | -999.90 | -999.00 | .000 | 267.0 | .1 | -50.0 |
| 14 | 1169.80 | 90.0 | 1.0 | -999.90 | -999.00 | .000 | 267.0 | .1 | -90.0 |
| 15 | 1202.78 | 100.0 | 1.0 | -999.90 | -999.00 | .000 | 178.0 | .1 | -90.0 |
| 16 | 1075.20 | 100.0 | 1.0 | -999.90 | -999.00 | .000 | 178.0 | .1 | -10.0 |
| 17 | 705.29 | 90.0 | 1.0 | -999.90 | -999.00 | .000 | 178.0 | .3 | -50.0 |
| 18 | 675.22 | 75.0 | 1.0 | -999.90 | -999.00 | .000 | 178.0 | .1 | -10.0 |
| 19 | 625.97 | 70.0 | 1.0 | -999.90 | -999.00 | .000 | 178.0 | .1 | -10.0 |
| 20 | 975.16 | 80.0 | 1.0 | -999.90 | -999.00 | .000 | 267.0 | .1 | -50.0 |
| 21 | 1156.60 | 80.0 | 1.0 | -999.90 | -999.00 | .000 | 267.0 | .1 | -90.0 |
| 22 | 1283.61 | 80.0 | 1.0 | -999.90 | -999.00 | .000 | 267.0 | .1 | -50.0 |
| 23 | 1536.76 | 90.0 | 1.0 | -999.90 | -999.00 | .000 | 267.0 | .1 | -50.0 |
| 24 | 1097.03 | 90.0 | 1.0 | -999.90 | -999.00 | .000 | 267.0 | .1 | -10.0 |
| 25 | 1448.55 | 100.0 | 1.0 | -999.90 | -999.00 | .000 | 178.0 | .1 | -90.0 |
| 26 | 1281.65 | 100.0 | 1.0 | -999.90 | -999.00 | .000 | 178.0 | .1 | -10.0 |
| 27 | 854.67 | 100.0 | 1.0 | -999.90 | -999.00 | .000 | 178.0 | .3 | -90.0 |
| 28 | 730.22 | 80.0 | 1.0 | -999.90 | -999.00 | .000 | 178.0 | .3 | -90.0 |
| 29 | 769.15 | 80.0 | 1.0 | -999.90 | -999.00 | .000 | 178.0 | .1 | -10.0 |
| 30 | 780.19 | 75.0 | 1.0 | -999.90 | -999.00 | .000 | 267.0 | .3 | -90.0 |
| 31 | 730.47 | 80.0 | 1.0 | -999.90 | -999.00 | .000 | 267.0 | .1 | -10.0 |
| 32 | 563.78 | 70.0 | 1.0 | -999.90 | -999.00 | .000 | 267.0 | .3 | -90.0 |
| 33 | 899.26 | 70.0 | 1.0 | -999.90 | -999.00 | .000 | 267.0 | .1 | -90.0 |
| 34 | 1119.07 | 80.0 | 1.0 | -999.90 | -999.00 | .000 | 267.0 | .1 | -50.0 |
| 35 | 1308.81 | 80.0 | 1.0 | -999.90 | -999.00 | .000 | 267.0 | .1 | -50.0 |
| 36 | 1198.90 | 90.0 | 1.0 | -999.90 | -999.00 | .000 | 267.0 | .1 | -50.0 |
| 37 | 1084.21 | 90.0 | 1.0 | -999.90 | -999.00 | .000 | 267.0 | .1 | -10.0 |
| 38 | 1275.16 | 90.0 | 1.0 | -999.90 | -999.00 | .000 | 267.0 | .1 | -10.0 |
| 39 | 1205.08 | 100.0 | 1.0 | -999.90 | -999.00 | .000 | 178.0 | .1 | -90.0 |
| 40 | 813.08 | 75.0 | 1.0 | -999.90 | -999.00 | .000 | 178.0 | .3 | -50.0 |
| 41 | 1087.59 | 90.0 | 1.0 | -999.90 | -999.00 | .000 | 178.0 | .1 | -10.0 |
| 42 | 883.15 | 70.0 | 1.0 | -999.90 | -999.00 | .000 | 178.0 | .1 | -10.0 |
| 43 | 1132.64 | 80.0 | 1.0 | -999.90 | -999.00 | .000 | 267.0 | .1 | -10.0 |
| 44 | 910.17 | 70.0 | 1.0 | -999.90 | -999.00 | .000 | 178.0 | .1 | -90.0 |
| 45 | 808.48 | 75.0 | 1.0 | -999.90 | -999.00 | .000 | 267.0 | .1 | -10.0 |
| 46 | 1211.31 | 80.0 | 1.0 | -999.90 | -999.00 | .000 | 267.0 | .1 | -50.0 |
| 47 | 1151.05 | 90.0 | 1.0 | -999.90 | -999.00 | .000 | 178.0 | .1 | -90.0 |
| 48 | 1591.91 | 90.0 | 1.0 | -999.90 | -999.00 | .000 | 178.0 | .1 | -90.0 |
| 49 | 1501.59 | 90.0 | 1.0 | -999.90 | -999.00 | .000 | 178.0 | .1 | -50.0 |
| 50 | 1137.93 | 90.0 | 1.0 | -999.90 | -999.00 | .000 | 178.0 | .1 | -90.0 |
| 51 | 1291.64 | 80.0 | 1.0 | -999.90 | -999.00 | .000 | 267.0 | .1 | -90.0 |
| 52 | 920.21 | 80.0 | 1.0 | -999.90 | -999.00 | .000 | 267.0 | .1 | -10.0 |
| 53 | 1229.08 | 80.0 | 1.0 | -999.90 | -999.00 | .000 | 267.0 | .1 | -90.0 |
| 54 | 1240.33 | 80.0 | 1.0 | -999.90 | -999.00 | .000 | 267.0 | .1 | -50.0 |

UNSTABLE - FILE 4

SUMMARY FOR ALL UNSTABLE HOURS

| REC # | CONC UG/M**3 | WD M/S | WS M/S | SIGV M/S | SIGW M/S | DTHDZ DEG/M | ZI M | USTAR M/S | EL M |
|-------|--------------|--------|--------|----------|----------|-------------|-------|-----------|-------|
| 51 | 1731.67 | 340.0 | 1.0 | -999.90 | -999.00 | .000 | 198.7 | .1 | -10.0 |

SUMMARY FOR ALL HOURS

| REC # | CONC UG/M**3 | 3HR UG/M**3 | 24HR UG/M**3 | ANNUAL UG/M**3 |
|-------|--------------|-------------|--------------|----------------|
| 51 | 1731.67 | 1212.17 | 259.75 | 51.95 |

RECEPTOR SUMMARY FOR UNSTABLE HOURS

| REC # | CONC UG/M**3 | WD M/S | WS M/S | SIGV M/S | SIGW M/S | DTHDZ DEG/M | ZI M | USTAR M/S | EL M |
|-------|--------------|--------|--------|----------|----------|-------------|-------|-----------|-------|
| 1 | 658.26 | 60.0 | 1.0 | -999.90 | -999.00 | .000 | 198.7 | .1 | -50.0 |
| 2 | 693.06 | 50.0 | 1.0 | -999.90 | -999.00 | .000 | 198.7 | .1 | -10.0 |
| 3 | 797.03 | 50.0 | 1.0 | -999.90 | -999.00 | .000 | 198.7 | .3 | -90.0 |
| 4 | 737.09 | 50.0 | 1.0 | -999.90 | -999.00 | .000 | 198.7 | .3 | -10.0 |
| 5 | 1030.46 | 350.0 | 1.0 | -999.90 | -999.00 | .000 | 198.7 | .5 | -50.0 |
| 6 | 1472.00 | 320.0 | 1.0 | -999.90 | -999.00 | .000 | 198.7 | .3 | -90.0 |
| 7 | 1145.27 | 320.0 | 1.0 | -999.90 | -999.00 | .000 | 198.7 | .1 | -10.0 |
| 8 | 1643.95 | 330.0 | 1.0 | -999.90 | -999.00 | .000 | 198.7 | .1 | -50.0 |
| 9 | 1433.28 | 350.0 | 1.0 | -999.90 | -999.00 | .000 | 198.7 | .1 | -50.0 |
| 10 | 1222.62 | 360.0 | 1.0 | -999.90 | -999.00 | .000 | 298.1 | .1 | -50.0 |
| 11 | 923.00 | 10.0 | 1.0 | -999.90 | -999.00 | .000 | 298.1 | .1 | -50.0 |
| 12 | 729.18 | 10.0 | 1.0 | -999.90 | -999.00 | .000 | 298.1 | .1 | -50.0 |
| 13 | 605.47 | 10.0 | 1.0 | -999.90 | -999.00 | .000 | 298.1 | .1 | -50.0 |
| 14 | 749.34 | 15.0 | 1.0 | -999.90 | -999.00 | .000 | 298.1 | .1 | -50.0 |
| 15 | 966.46 | 15.0 | 1.0 | -999.90 | -999.00 | .000 | 298.1 | .1 | -50.0 |
| 16 | 835.47 | 20.0 | 1.0 | -999.90 | -999.00 | .000 | 298.1 | .1 | -50.0 |
| 17 | 734.98 | 50.0 | 1.0 | -999.90 | -999.00 | .000 | 198.7 | .1 | -50.0 |
| 18 | 695.08 | 40.0 | 1.0 | -999.90 | -999.00 | .000 | 198.7 | .1 | -10.0 |
| 19 | 862.98 | 30.0 | 1.0 | -999.90 | -999.00 | .000 | 198.7 | .3 | -90.0 |
| 20 | 831.33 | 40.0 | 1.0 | -999.90 | -999.00 | .000 | 198.7 | .3 | -10.0 |
| 21 | 1207.23 | 350.0 | 1.0 | -999.90 | -999.00 | .000 | 198.7 | .5 | -90.0 |
| 22 | 1476.44 | 320.0 | 1.0 | -999.90 | -999.00 | .000 | 198.7 | .1 | -10.0 |
| 23 | 1212.12 | 330.0 | 1.0 | -999.90 | -999.00 | .000 | 198.7 | .1 | -10.0 |
| 24 | 1574.33 | 350.0 | 1.0 | -999.90 | -999.00 | .000 | 198.7 | .1 | -50.0 |
| 25 | 1334.21 | 360.0 | 1.0 | -999.90 | -999.00 | .000 | 198.7 | .1 | -90.0 |
| 26 | 1183.42 | 10.0 | 1.0 | -999.90 | -999.00 | .000 | 298.1 | .1 | -50.0 |
| 27 | 973.46 | 10.0 | 1.0 | -999.90 | -999.00 | .000 | 298.1 | .1 | -90.0 |
| 28 | 913.27 | 15.0 | 1.0 | -999.90 | -999.00 | .000 | 298.1 | .1 | -90.0 |
| 29 | 1159.36 | 15.0 | 1.0 | -999.90 | -999.00 | .000 | 298.1 | .1 | -90.0 |
| 30 | 644.72 | 40.0 | 1.0 | -999.90 | -999.00 | .000 | 198.7 | .1 | -90.0 |
| 31 | 667.34 | 35.0 | 1.0 | -999.90 | -999.00 | .000 | 198.7 | .1 | -10.0 |
| 32 | 891.86 | 30.0 | 1.0 | -999.90 | -999.00 | .000 | 198.7 | .1 | -10.0 |
| 33 | 896.02 | 30.0 | 1.0 | -999.90 | -999.00 | .000 | 198.7 | .5 | -90.0 |
| 34 | 1286.91 | 350.0 | 1.0 | -999.90 | -999.00 | .000 | 198.7 | .3 | -50.0 |
| 35 | 1341.52 | 330.0 | 1.0 | -999.90 | -999.00 | .000 | 198.7 | .3 | -90.0 |
| 36 | 1491.27 | 330.0 | 1.0 | -999.90 | -999.00 | .000 | 198.7 | .1 | -50.0 |
| 37 | 1674.88 | 350.0 | 1.0 | -999.90 | -999.00 | .000 | 198.7 | .1 | -50.0 |
| 38 | 1406.03 | 10.0 | 1.0 | -999.90 | -999.00 | .000 | 198.7 | .1 | -50.0 |
| 39 | 1153.12 | 10.0 | 1.0 | -999.90 | -999.00 | .000 | 298.1 | .1 | -50.0 |
| 40 | 1176.65 | 15.0 | 1.0 | -999.90 | -999.00 | .000 | 298.1 | .1 | -90.0 |
| 41 | 1018.07 | 15.0 | 1.0 | -999.90 | -999.00 | .000 | 198.7 | .1 | -90.0 |
| 42 | 554.67 | 25.0 | 1.0 | -999.90 | -999.00 | .000 | 198.7 | .1 | -10.0 |
| 43 | 666.00 | 25.0 | 1.0 | -999.90 | -999.00 | .000 | 198.7 | .1 | -10.0 |
| 44 | 864.91 | 30.0 | 1.0 | -999.90 | -999.00 | .000 | 198.7 | .1 | -10.0 |
| 45 | 1228.14 | 20.0 | 1.0 | -999.90 | -999.00 | .000 | 198.7 | .1 | -10.0 |
| 46 | 1157.95 | 360.0 | 1.0 | -999.90 | -999.00 | .000 | 198.7 | .1 | -10.0 |
| 47 | 1008.61 | 20.0 | 1.0 | -999.90 | -999.00 | .000 | 198.7 | .5 | -90.0 |
| 48 | 1359.21 | 360.0 | 1.0 | -999.90 | -999.00 | .000 | 198.7 | .3 | -50.0 |
| 49 | 1450.06 | 340.0 | 1.0 | -999.90 | -999.00 | .000 | 198.7 | .3 | -90.0 |
| 50 | 1652.92 | 330.0 | 1.0 | -999.90 | -999.00 | .000 | 198.7 | .1 | -10.0 |
| 51 | 1731.67 | 340.0 | 1.0 | -999.90 | -999.00 | .000 | 198.7 | .1 | -10.0 |
| 52 | 1427.33 | 360.0 | 1.0 | -999.90 | -999.00 | .000 | 198.7 | .1 | -10.0 |
| 53 | 1333.12 | 10.0 | 1.0 | -999.90 | -999.00 | .000 | 198.7 | .1 | -10.0 |
| 54 | 1542.53 | 15.0 | 1.0 | -999.90 | -999.00 | .000 | 198.7 | .1 | -50.0 |
| 55 | 1270.60 | 10.0 | 1.0 | -999.90 | -999.00 | .000 | 198.7 | .1 | -50.0 |
| 56 | 1228.04 | 10.0 | 1.0 | -999.90 | -999.00 | .000 | 298.1 | .1 | -50.0 |
| 57 | 1274.01 | 15.0 | 1.0 | -999.90 | -999.00 | .000 | 298.1 | .1 | -90.0 |
| 58 | 1086.08 | 15.0 | 1.0 | -999.90 | -999.00 | .000 | 198.7 | .1 | -50.0 |
| 59 | 958.25 | 20.0 | 1.0 | -999.90 | -999.00 | .000 | 198.7 | .1 | -50.0 |
| 60 | 681.87 | 25.0 | 1.0 | -999.90 | -999.00 | .000 | 198.7 | .1 | -10.0 |
| 61 | 1067.36 | 20.0 | 1.0 | -999.90 | -999.00 | .000 | 198.7 | .1 | -10.0 |
| 62 | 1151.94 | 360.0 | 1.0 | -999.90 | -999.00 | .000 | 198.7 | .1 | -10.0 |
| 63 | 1356.38 | 360.0 | 1.0 | -999.90 | -999.00 | .000 | 198.7 | .3 | -90.0 |
| 64 | 1508.98 | 340.0 | 1.0 | -999.90 | -999.00 | .000 | 198.7 | .1 | -10.0 |
| 65 | 1509.68 | 360.0 | 1.0 | -999.90 | -999.00 | .000 | 198.7 | .1 | -50.0 |
| 66 | 1401.77 | 15.0 | 1.0 | -999.90 | -999.00 | .000 | 198.7 | .1 | -50.0 |
| 67 | 1079.83 | 10.0 | 1.0 | -999.90 | -999.00 | .000 | 198.7 | .1 | -50.0 |
| 68 | 1205.05 | 20.0 | 1.0 | -999.90 | -999.00 | .000 | 198.7 | .1 | -90.0 |
| 69 | 1465.42 | 15.0 | 1.0 | -999.90 | -999.00 | .000 | 198.7 | .1 | -90.0 |
| 70 | 1405.56 | 20.0 | 1.0 | -999.90 | -999.00 | .000 | 198.7 | .1 | -90.0 |

SUMMARY FOR ALL STABLE HOURS

| REC # | CONC UG/M**3 | WD | WS M/S | SIGV M/S | SIGW M/S | DTHDZ DEG/M | ZI M | USTAR M/S | EL M |
|-------|--------------|------|--------|----------|----------|-------------|------|-----------|------|
| 41 | 1731.47 | 72.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |

SUMMARY FOR ALL HOURS

| REC # | CONC 3HR UG/M**3 | UG/M**3 | 24HR UG/M**3 | ANNUAL UG/M**3 |
|-------|------------------|---------|--------------|----------------|
| 41 | 1731.47 | 1212.03 | 259.72 | 51.94 |

RECEPTOR SUMMARY FOR STABLE HOURS

| REC # | CONC UG/M**3 | WD | WS M/S | SIGV M/S | SIGW M/S | DTHDZ DEG/M | ZI M | USTAR M/S | EL M |
|-------|--------------|------|--------|----------|----------|-------------|------|-----------|------|
| 1 | 1395.92 | 73.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 2 | 1432.38 | 73.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 3 | 1462.19 | 73.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 4 | 1335.38 | 73.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 5 | 1277.04 | 75.0 | 2.0 | .30 | .15 | .035 | 50.0 | .1 | 5.0 |
| 6 | 1219.88 | 74.0 | 3.0 | .30 | .08 | .035 | 50.0 | .1 | 5.0 |
| 7 | 1258.30 | 74.0 | 3.0 | .30 | .08 | .035 | 50.0 | .1 | 5.0 |
| 8 | 1297.11 | 73.0 | 3.0 | .30 | .08 | .035 | 50.0 | .1 | 5.0 |
| 9 | 1335.88 | 72.0 | 3.0 | .30 | .08 | .035 | 50.0 | .1 | 5.0 |
| 10 | 1531.91 | 73.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 11 | 1558.37 | 73.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 12 | 1592.35 | 73.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 13 | 1513.25 | 73.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 14 | 1389.15 | 73.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 15 | 1245.26 | 74.0 | 2.0 | .30 | .15 | .035 | 50.0 | .1 | 5.0 |
| 16 | 1250.86 | 72.0 | 3.0 | .30 | .08 | .035 | 50.0 | .1 | 5.0 |
| 17 | 1294.04 | 71.0 | 3.0 | .30 | .08 | .035 | 50.0 | .1 | 5.0 |
| 18 | 1336.33 | 70.0 | 3.0 | .30 | .08 | .035 | 50.0 | .1 | 5.0 |
| 19 | 1579.80 | 73.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 20 | 1612.94 | 73.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 21 | 1649.60 | 73.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 22 | 1648.01 | 73.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 23 | 1687.63 | 72.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 24 | 1439.71 | 72.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 25 | 1272.02 | 72.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 26 | 1282.89 | 69.0 | 3.0 | .30 | .08 | .035 | 50.0 | .1 | 5.0 |
| 27 | 1326.27 | 68.0 | 3.0 | .30 | .08 | .035 | 50.0 | .1 | 5.0 |
| 28 | 1560.37 | 73.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 29 | 1593.80 | 73.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 30 | 1629.01 | 73.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 31 | 1666.02 | 73.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 32 | 1709.20 | 72.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 33 | 1631.19 | 72.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 34 | 1498.48 | 72.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 35 | 1333.82 | 72.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 36 | 1311.14 | 66.0 | 3.0 | .30 | .08 | .035 | 50.0 | .1 | 5.0 |
| 37 | 1575.49 | 73.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 38 | 1560.39 | 73.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 39 | 1595.39 | 73.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 40 | 1633.30 | 72.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 41 | 1731.47 | 72.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 42 | 1655.04 | 72.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 43 | 1615.55 | 72.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 44 | 1574.51 | 72.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 45 | 1405.14 | 72.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 46 | 1337.08 | 73.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 47 | 1365.29 | 73.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 48 | 1395.03 | 73.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 49 | 1513.08 | 72.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 50 | 1554.42 | 72.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 51 | 1597.62 | 72.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 52 | 1640.16 | 72.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 53 | 1600.32 | 72.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 54 | 1662.46 | 72.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 55 | 1178.75 | 73.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 56 | 1202.58 | 73.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 57 | 1227.72 | 73.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 58 | 1353.49 | 72.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 59 | 1389.92 | 72.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 60 | 1428.10 | 72.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 61 | 1463.54 | 72.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 62 | 1517.35 | 72.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 63 | 1456.08 | 72.0 | 1. | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 64 | 1005.86 | 73.0 | 1.. | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 65 | 1024.83 | 73.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 66 | 1144.16 | 73.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 67 | 1169.07 | 72.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 68 | 1306.52 | 72.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 69 | 1231.56 | 72.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 70 | 1259.33 | 72.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 71 | 1305.17 | 72.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 72 | 1228.58 | 72.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |

| | | | | | | | | | |
|----|---------|------|-----|-----|-----|------|------|----|-----|
| 73 | 1016.97 | 73.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 74 | 1036.72 | 73.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 75 | 1057.61 | 73.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 76 | 1079.98 | 72.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 77 | 1108.00 | 72.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 78 | 1137.70 | 72.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 79 | 1164.35 | 72.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 80 | 1204.72 | 72.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 81 | 1252.35 | 72.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 82 | 34.68 | 75.0 | 1.0 | .75 | .75 | .035 | 50.0 | .1 | 5.0 |
| 83 | 34.68 | 75.0 | 1.0 | .75 | .75 | .035 | 50.0 | .1 | 5.0 |

SUMMARY FOR ALL STABLE HOURS

| REC # | CONC UG/M**3 | WD | WS M/S | SIGV M/S | SIGW M/S | DTHDZ DEG/M | ZI M | USTAR M/S | EL M |
|-------|--------------|------|--------|----------|----------|-------------|------|-----------|------|
| 98 | 1733.80 | 16.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |

\ SUMMARY FOR ALL HOURS

| REC # | CONC UG/M**3 | 3HR UG/M**3 | 24HR UG/M**3 | ANNUAL UG/M**3 |
|-------|--------------|-------------|--------------|----------------|
| 98 | 1733.80 | 1213.66 | 260.07 | 52.01 |

RECEPTOR SUMMARY FOR STABLE HOURS

| REC # | CONC UG/M**3 | WD | WS M/S | SIGV M/S | SIGW M/S | DTHDZ DEG/M | ZI M | USTAR M/S | EL M |
|-------|--------------|------|--------|----------|----------|-------------|------|-----------|------|
| 1 | 1240.15 | 26.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 2 | 1192.68 | 15.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 3 | 1248.31 | 17.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 4 | 1372.07 | 19.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 5 | 1421.46 | 19.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 6 | 1418.45 | 18.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 7 | 1416.00 | 18.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 8 | 1413.25 | 18.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 9 | 1325.63 | 18.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 10 | 1292.51 | 21.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 11 | 1242.84 | 13.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 12 | 1329.45 | 16.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 13 | 1443.42 | 17.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 14 | 1486.06 | 18.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 15 | 1549.27 | 17.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 16 | 1546.07 | 17.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 17 | 1542.56 | 17.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 18 | 1538.78 | 17.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 19 | 1428.06 | 17.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 20 | 1344.55 | 12.0 | 2.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 21 | 1381.38 | 14.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 22 | 1508.10 | 16.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 23 | 1559.66 | 18.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 24 | 1536.89 | 16.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 25 | 1583.68 | 16.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 26 | 1580.19 | 16.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 27 | 1576.42 | 16.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 28 | 1431.12 | 16.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 29 | 1440.25 | 15.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 30 | 1422.23 | 12.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 31 | 1552.77 | 15.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 32 | 1530.06 | 16.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 33 | 1575.50 | 16.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 34 | 1598.63 | 15.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 35 | 1595.31 | 15.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 36 | 1591.70 | 15.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 37 | 1658.73 | 15.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 38 | 1177.08 | 13.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 39 | 1207.68 | 13.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 40 | 1514.94 | 16.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 41 | 1568.99 | 15.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 42 | 1591.50 | 15.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 43 | 1587.70 | 15.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 44 | 1493.43 | 15.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 45 | 1483.60 | 15.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 46 | 1265.08 | 13.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 47 | 1570.78 | 15.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 48 | 1547.93 | 15.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 49 | 1561.92 | 15.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 50 | 1583.96 | 14.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 51 | 1581.09 | 14.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 52 | 1476.43 | 14.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 53 | 1467.39 | 14.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 54 | 1458.23 | 14.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 55 | 1594.70 | 15.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 56 | 1574.55 | 14.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 57 | 1572.51 | 14.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 58 | 1577.89 | 14.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 59 | 1574.58 | 14.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 60 | 1460.47 | 14.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 61 | 1451.27 | 14.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 62 | 1441.97 | 14.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 63 | 1432.61 | 14.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 64 | 1476.87 | 14.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 65 | 1471.35 | 14.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 66 | 1462.35 | 14.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 67 | 1453.52 | 14.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 68 | 1444.29 | 14.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 69 | 1434.97 | 14.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 70 | 1425.60 | 14.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 71 | 1416.97 | 13.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 72 | 1408.35 | 13.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |

| | | | | | | | | | |
|-----|---------|------|-----|-----|-----|------|------|----|-----|
| 73 | 1455.43 | 14.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 74 | 1446.26 | 14.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 75 | 1437.07 | 14.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 76 | 1428.36 | 13.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 77 | 1419.87 | 13.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 78 | 1411.30 | 13.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 79 | 1546.81 | 13.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 80 | 1542.92 | 13.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 81 | 1538.87 | 13.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 82 | 1668.71 | 20.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 83 | 1661.94 | 20.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 84 | 1613.59 | 19.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 85 | 1422.09 | 21.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 86 | 1685.04 | 18.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 87 | 1691.73 | 17.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 88 | 1636.01 | 17.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 89 | 1543.58 | 17.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 90 | 1703.36 | 17.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 91 | 1705.96 | 17.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 92 | 1709.94 | 16.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 93 | 1552.06 | 16.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 94 | 1729.21 | 16.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 95 | 1731.14 | 16.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 96 | 1717.21 | 16.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 97 | 1656.40 | 16.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 98 | 1733.80 | 16.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 99 | 1733.63 | 16.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 100 | 1719.29 | 15.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 101 | 1719.90 | 15.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 102 | 1688.17 | 15.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 103 | 1682.75 | 15.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 104 | 1720.17 | 15.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 105 | 1719.42 | 15.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 106 | 1671.17 | 15.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 107 | 1664.05 | 15.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 108 | 1656.44 | 15.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 109 | 1361.74 | 13.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 110 | 1650.24 | 15.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 111 | 1642.02 | 15.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 112 | 1307.56 | 13.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 113 | 1496.70 | 14.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 114 | 1301.63 | 13.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 115 | 1294.20 | 13.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 116 | 1467.95 | 14.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 117 | 1461.16 | 14.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 118 | 1652.77 | 20.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 119 | 1675.12 | 18.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 120 | 1699.28 | 17.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 121 | 1726.26 | 16.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 122 | 1682.02 | 13.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 123 | 1693.38 | 16.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 124 | 1677.73 | 15.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 125 | 1658.09 | 15.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 126 | 1635.46 | 15.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 127 | 1627.55 | 20.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 128 | 1609.91 | 20.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 129 | 1637.24 | 15.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 130 | 1635.84 | 13.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 131 | 1605.09 | 22.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 132 | 1599.73 | 23.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 133 | 1683.60 | 15.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 134 | 1665.52 | 15.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 135 | 1643.87 | 15.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 136 | 1452.13 | 22.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 137 | 1531.88 | 21.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 138 | 1557.01 | 22.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 139 | 1578.74 | 22.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 140 | 1591.53 | 23.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 141 | 1596.71 | 23.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 142 | 1590.64 | 23.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 143 | 1672.42 | 15.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 144 | 1651.94 | 15.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 145 | 1304.02 | 24.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 146 | 1332.71 | 23.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 147 | 1335.90 | 25.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 148 | 1426.18 | 24.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 149 | 1502.85 | 24.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 150 | 1560.58 | 23.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 151 | 1588.32 | 23.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 152 | 1580.84 | 23.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 153 | 1731.07 | 15.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 154 | 1688.85 | 15.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 155 | 1681.97 | 15.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 156 | 1542.34 | 15.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 157 | 1690.84 | 15.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 158 | 1684.70 | 15.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 159 | 1676.60 | 15.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 160 | 1545.24 | 24.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 161 | 1534.25 | 24.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 162 | 1679.73 | 15.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |

| | | | | | | | | | |
|-----|---------|------|-----|-----|-----|------|------|----|-----|
| 163 | 1465.43 | 25.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 164 | 1536.72 | 24.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 165 | 1525.39 | 24.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 166 | 1686.57 | 15.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 167 | 1644.40 | 15.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 168 | 1189.11 | 12.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 169 | 1684.03 | 15.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 170 | 1240.97 | 12.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 171 | 1470.75 | 14.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 172 | 1286.46 | 12.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 173 | 1541.48 | 14.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 174 | 1436.29 | 13.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 175 | 1566.70 | 23.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 176 | 1579.36 | 23.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 177 | 1523.20 | 24.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 178 | 1457.16 | 24.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 179 | 1555.71 | 24.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 180 | 1516.04 | 24.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 181 | 1408.57 | 25.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 182 | 1324.55 | 26.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 183 | 1473.75 | 25.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 184 | 1357.32 | 26.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 185 | 1271.04 | 27.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |
| 186 | 1183.54 | 27.0 | 1.0 | .30 | .04 | .035 | 50.0 | .1 | 5.0 |

UNSTABLE DENSE RECEPATORS - HILL 1

SUMMARY FOR ALL UNSTABLE HOURS

| REC # | CONC UG/M**3 | WD M/S | WS M/S | SIGV M/S | SIGW M/S | DTHDZ DEG/M | ZI M | USTAR M/S | EL M |
|-------|--------------|--------|--------|----------|----------|-------------|-------|-----------|-------|
| 13 | 1756.37 | 93.0 | 1.0 | -999.90 | -999.00 | .000 | 178.0 | .1 | -90.0 |

SUMMARY FOR ALL HOURS

| REC # | CONC UG/M**3 | 3HR UG/M**3 | 24HR UG/M**3 | ANNUAL UG/M**3 |
|-------|--------------|-------------|--------------|----------------|
| 13 | 1756.37 | 1229.46 | 263.46 | 52.69 |

RECEPTOR SUMMARY FOR UNSTABLE HOURS

| REC # | CONC UG/M**3 | WD | WS M/S | SIGV M/S | SIGW M/S | DTHDZ DEG/M | ZI M | USTAR M/S | EL M |
|-------|--------------|------|--------|----------|----------|-------------|-------|-----------|-------|
| 1 | 1562.82 | 95.0 | 1.0 | -999.90 | -999.00 | .000 | 178.0 | .1 | -90.0 |
| 2 | 1570.25 | 94.0 | 1.0 | -999.90 | -999.00 | .000 | 178.0 | .1 | -90.0 |
| 3 | 1579.90 | 92.0 | 1.0 | -999.90 | -999.00 | .000 | 178.0 | .1 | -90.0 |
| 4 | 1586.35 | 91.0 | 1.0 | -999.90 | -999.00 | .000 | 178.0 | .1 | -90.0 |
| 5 | 1584.55 | 90.0 | 1.0 | -999.90 | -999.00 | .000 | 178.0 | .1 | -90.0 |
| 6 | 1638.90 | 95.0 | 1.0 | -999.90 | -999.00 | .000 | 178.0 | .1 | -90.0 |
| 7 | 1659.71 | 94.0 | 1.0 | -999.90 | -999.00 | .000 | 178.0 | .1 | -90.0 |
| 8 | 1665.45 | 93.0 | 1.0 | -999.90 | -999.00 | .000 | 178.0 | .1 | -90.0 |
| 9 | 1672.37 | 91.0 | 1.0 | -999.90 | -999.00 | .000 | 178.0 | .1 | -90.0 |
| 10 | 1664.29 | 90.0 | 1.0 | -999.90 | -999.00 | .000 | 178.0 | .1 | -90.0 |
| 11 | 1685.13 | 95.0 | 1.0 | -999.90 | -999.00 | .000 | 178.0 | .1 | -90.0 |
| 12 | 1732.80 | 94.0 | 1.0 | -999.90 | -999.00 | .000 | 178.0 | .1 | -90.0 |
| 13 | 1756.37 | 93.0 | 1.0 | -999.90 | -999.00 | .000 | 178.0 | .1 | -90.0 |
| 14 | 1753.04 | 92.0 | 1.0 | -999.90 | -999.00 | .000 | 178.0 | .1 | -90.0 |
| 15 | 1737.56 | 90.0 | 1.0 | -999.90 | -999.00 | .000 | 178.0 | .1 | -90.0 |
| 16 | 1670.48 | 95.0 | 1.0 | -999.90 | -999.00 | .000 | 178.0 | .1 | -90.0 |
| 17 | 1414.15 | 95.0 | 1.0 | -999.90 | -999.00 | .000 | 178.0 | .1 | -90.0 |
| 18 | 1448.07 | 94.0 | 1.0 | -999.90 | -999.00 | .000 | 178.0 | .1 | -90.0 |
| 19 | 1449.81 | 93.0 | 1.0 | -999.90 | -999.00 | .000 | 178.0 | .1 | -90.0 |
| 20 | 1418.17 | 91.0 | 1.0 | -999.90 | -999.00 | .000 | 178.0 | .1 | -90.0 |
| 21 | 1175.91 | 95.0 | 1.0 | -999.90 | -999.00 | .000 | 178.0 | .1 | -90.0 |
| 22 | 1327.30 | 95.0 | 1.0 | -999.90 | -999.00 | .000 | 178.0 | .1 | -90.0 |
| 23 | 1375.41 | 95.0 | 1.0 | -999.90 | -999.00 | .000 | 178.0 | .1 | -90.0 |
| 24 | 1360.13 | 93.0 | 1.0 | -999.90 | -999.00 | .000 | 178.0 | .1 | -90.0 |
| 25 | 1293.90 | 92.0 | 1.0 | -999.90 | -999.00 | .000 | 178.0 | .1 | -90.0 |
| 26 | 361.27 | 95.0 | 1.0 | -999.90 | -999.00 | .000 | 178.0 | .5 | -10.0 |

UNSTABLE DENSE RECEPTORS - HILL 2

SUMMARY FOR ALL UNSTABLE HOURS

| REC # | CONC UG/M**3 | WD M/S | WS M/S | SIGV M/S | SIGW M/S | DTHDZ DEG/M | ZI M | USTAR M/S | EL M |
|-------|--------------|--------|--------|----------|----------|-------------|-------|-----------|-------|
| 13 | 1765.96 | 342.0 | 1.0 | -999.90 | -999.00 | .000 | 198.7 | .1 | -10.0 |

SUMMARY FOR ALL HOURS

| REC # | CONC UG/M**3 | 3HR UG/M**3 | 24HR UG/M**3 | ANNUAL UG/M**3 |
|-------|--------------|-------------|--------------|----------------|
| 13 | 1765.96 | 1236.17 | 264.89 | 52.98 |

RECEPTOR SUMMARY FOR UNSTABLE HOURS

| REC # | CONC UG/M**3 | WD | WS M/S | SIGV M/S | SIGW M/S | DTHDZ DEG/M | ZI M | USTAR M/S | EL M |
|-------|--------------|-------|--------|----------|----------|-------------|-------|-----------|-------|
| 1 | 1486.37 | 339.0 | 1.0 | -999.90 | -999.00 | .000 | 198.7 | .1 | -10.0 |
| 2 | 1666.43 | 343.0 | 1.0 | -999.90 | -999.00 | .000 | 198.7 | .1 | -10.0 |
| 3 | 1582.34 | 345.0 | 1.0 | -999.90 | -999.00 | .000 | 198.7 | .1 | -10.0 |
| 4 | 1570.97 | 345.0 | 1.0 | -999.90 | -999.00 | .000 | 198.7 | .1 | -10.0 |
| 5 | 1452.10 | 345.0 | 1.0 | -999.90 | -999.00 | .000 | 198.7 | .1 | -10.0 |
| 6 | 1723.19 | 339.0 | 1.0 | -999.90 | -999.00 | .000 | 198.7 | .1 | -10.0 |
| 7 | 1659.88 | 341.0 | 1.0 | -999.90 | -999.00 | .000 | 198.7 | .1 | -10.0 |
| 8 | 1578.90 | 343.0 | 1.0 | -999.90 | -999.00 | .000 | 198.7 | .1 | -10.0 |
| 9 | 1648.81 | 345.0 | 1.0 | -999.90 | -999.00 | .000 | 198.7 | .1 | -10.0 |
| 10 | 1538.37 | 345.0 | 1.0 | -999.90 | -999.00 | .000 | 198.7 | .1 | -10.0 |
| 11 | 1715.27 | 337.0 | 1.0 | -999.90 | -999.00 | .000 | 198.7 | .1 | -10.0 |
| 12 | 1657.20 | 339.0 | 1.0 | -999.90 | -999.00 | .000 | 198.7 | .1 | -10.0 |
| 13 | 1765.96 | 342.0 | 1.0 | -999.90 | -999.00 | .000 | 198.7 | .1 | -10.0 |
| 14 | 1657.38 | 343.0 | 1.0 | -999.90 | -999.00 | .000 | 198.7 | .1 | -10.0 |
| 15 | 1554.62 | 344.0 | 1.0 | -999.90 | -999.00 | .000 | 198.7 | .1 | -10.0 |
| 16 | 1684.31 | 335.0 | 1.0 | -999.90 | -999.00 | .000 | 198.7 | .1 | -10.0 |
| 17 | 1635.30 | 336.0 | 1.0 | -999.90 | -999.00 | .000 | 198.7 | .1 | -10.0 |
| 18 | 1759.52 | 339.0 | 1.0 | -999.90 | -999.00 | .000 | 198.7 | .1 | -10.0 |
| 19 | 1651.32 | 340.0 | 1.0 | -999.90 | -999.00 | .000 | 198.7 | .1 | -10.0 |
| 20 | 1677.40 | 336.0 | 1.0 | -999.90 | -999.00 | .000 | 198.7 | .1 | -50.0 |
| 21 | 1567.06 | 335.0 | 1.0 | -999.90 | -999.00 | .000 | 198.7 | .1 | -10.0 |
| 22 | 1599.60 | 335.0 | 1.0 | -999.90 | -999.00 | .000 | 198.7 | .1 | -10.0 |
| 23 | 1739.89 | 337.0 | 1.0 | -999.90 | -999.00 | .000 | 198.7 | .1 | -10.0 |
| 24 | 1637.31 | 338.0 | 1.0 | -999.90 | -999.00 | .000 | 198.7 | .1 | -10.0 |
| 25 | 1586.53 | 335.0 | 1.0 | -999.90 | -999.00 | .000 | 198.7 | .1 | -50.0 |

APPENDIX B

SULFER DIOXIDE MODELING ANALYSIS
FOR
UNITED REFINING COMPANY

SUPPLEMENTAL CTSCREEN MODELING

REPORT A303
APRIL 1993

**Sulfur Dioxide Modeling Analysis
for United Refining Company
Warren Refinery**

Supplemental CTSCREEN Modeling

Report A303

April 1993

1. Introduction

Sigma Research completed a modeling study of sulfur dioxide emissions for the United Refining Company Warren refinery in November 1992 to assess compliance with ambient air quality standards.

Three different air quality models were used in the analysis. The CTSCREEN model was applied at 124 receptors on the two hills just south of the refinery. Further CTSCREEN modeling was conducted using densely spaced receptors near four locations on the hills with high predicted concentrations. A total of 317 receptors were modeled in these four dense receptor grids. The ISCST2 and RTDM models were applied using one year of meteorological data at 315 receptors. These receptors were placed up to five kilometers from the refinery at locations not on the two hills south of the refinery. The EPA intermediate terrain procedures were used in combining the predicted concentration from these two models. Background concentrations included direct modeling of the Penelec Warren Station and estimated contributions from all other sources using data measured at two air quality monitors.

No violations of the air quality standards were predicted on the two hills just south of the refinery using the CTSCREEN model. However, many violations were predicted at other locations by the ISCST2/RTDM modeling. Most of these were solely attributable or largely due to the Penelec Warren Station. The modeled contributions from the refinery alone did not result in exceedances of any air quality standards.

The net contribution from the proposed modifications to the refinery to each of the predicted violations was calculated. The net contribution to each violation was below the significance concentration, indicating that the refinery modifications would not significantly impact locations not in attainment with the air quality standards.

The predicted violations in Glade Township were all located at receptors on the 1916 foot hill just east of the refinery. These receptors were 1500 meters from the boilerhouse stack. Because a nonattainment designation could hinder future refinery expansion, a study was initiated to apply the more advanced CTSCREEN model to the hill. This report presents the results of that study.

2. Modeling Procedures

The CTSCREEN model (version 91107) was used to estimate the maximum SO₂ concentrations on the hill just east of the refinery. Both unstable and stable/neutral conditions were modeled. CTSCREEN does not use observed hourly meteorological conditions, but assumes a matrix of meteorological conditions that are thought to bracket the highest concentrations for most source-terrain configurations. CTSCREEN predicts maximum 1-hour average concentrations at each receptor which are then scaled by the model to predict HSH 3-hour and 24-hour concentrations and the annual average concentration at each receptor.

All refinery sources and the Penelec Warren station were explicitly modeled. Table 1 shows the modeled emission characteristics for the refinery. The Penelec emission characteristics are shown in Table 2.

The digitized terrain contours of the modeled hill are shown in Figure 1. The peak elevation, denoted by P, is 1916 feet. The contour interval is 100 feet. The other letters on the figure (A, B, E, F, G, H, I, L, V and W) are the locations of the refinery sources with emission rates above 2.2 lbs per hour.

Figure 2 is provided to show the orientation of the major modeled sources with the hill. This figure shows the hill with the same refinery sources as depicted in Figure 1, but also includes the location of the Penelec Warren Station.

CTSCREEN was provided with eighteen wind directions that encompassed the trajectories from each of the major SO₂ sources to the hill. Table 3 shows the flow vectors from each of the sources to the north and south sides of the hill and the hill peak. Based on this analysis, the modeled wind directions were 210° - 285° at 5° intervals and additional directions of 243° and 253°.

The CTSCREEN receptor generator was used to select receptors every 100 m along the hill contours, for a total of 205 receptors. The receptor coordinates and elevations are listed in Table 4. Two additional CTSCREEN runs were made with a dense network of local receptors (25 m intervals) surrounding the location of the maximum predicted concentration for the neutral/stable and unstable cases.

Background concentrations were taken from analyses conducted for the November 1992 report. The EPA-recommended procedure to calculate hourly SO₂ background averaged the

Table 1
United Refining Company
Modeled Emission Rates and Stack Conditions

| NOTE | ID | SOURCE | LB/HR SO2 | METERS EAST | METERS NORTH | BASE ELEV FEET | STACK HEIGHT METERS | STACK DIAM METERS | STACK TEMP K | STACK VEL MPS | SO2 RATE GPS |
|------|----|------------------------|-----------|-------------|--------------|----------------|---------------------|-------------------|--------------|---------------|--------------|
| | A | BOILERHOUSE | 195.1 | 0.0 | 0.0 | 1195 | 68.58 | 2.44 | 672.0 | 11.44 | 24.58 |
| | B | NO. 4 BOILER | 24.3 | -199.4 | 223.5 | 1195 | 45.72 | 1.70 | 505.4 | 12.37 | 3.06 |
| | C | FCC CHARGE HEATER | 1.1 | -210.1 | 222.2 | 1195 | 38.10 | 1.22 | 560.9 | 10.51 | 0.14 |
| | D | DHT1 HEATER | 0.1 | 245.5 | -145.9 | 1195 | 30.48 | 0.91 | 922.0 | 3.88 | 0.01 |
| 1 | E | PREFRACT REBOILER EAST | 9.0 | 204.5 | -114.9 | 1195 | 12.19 | 0.61 | 699.8 | 10.03 | 1.13 |
| 1 | F | PREFRACT REBOILER WEST | 9.0 | 207.8 | -118.1 | 1195 | 12.19 | 0.61 | 699.8 | 10.03 | 1.13 |
| | G | OLD REFORMER HEATER | 91.3 | 250.7 | -148.1 | 1195 | 45.72 | 1.89 | 699.8 | 10.42 | 11.50 |
| 2 | H | CRUDE (WHBCO) HEATER | 207.5 | 153.7 | -59.7 | 1195 | 45.72 | 2.59 | 699.8 | 15.05 | 26.27 |
| 2 | | VACUUM HEATER | 1 | | | | | | | | |
| | I | PRETREATER HEATER | 28.0 | 239.0 | -41.2 | 1195 | 51.82 | 1.89 | 588.7 | 3.84 | 3.53 |
| | J | NEW REFORMER HEATER | 2.2 | 241.2 | -141.6 | 1195 | 45.72 | 2.13 | 533.2 | 6.64 | 0.28 |
| | K | DEBUT REBOILER | 0.4 | 166.4 | -74.6 | 1195 | 30.48 | 0.85 | 922.0 | 12.79 | 0.05 |
| | L | FCC REGENERATOR | 285.0 | -165.7 | 284.3 | 1195 | 45.72 | 2.13 | 533.2 | 15.21 | 35.91 |
| | M | COMBO FLARE (BLOWDOWN) | 0.4 | 153.0 | -143.5 | 1195 | 7.32 | 3.05 | 1255.0 | 2.00 | 0.05 |
| | N | FCC FLARE (BLOWDOWN) | 0.1 | -468.8 | 321.8 | 1195 | 10.67 | 3.35 | 1255.0 | 0.42 | 0.01 |
| | O | NO. 5 BOILER | 1.2 | 227.2 | -113.8 | 1195 | 30.48 | 1.22 | 588.7 | 12.05 | 0.15 |
| | Q | SAT GAS KVG | 0.1 | 113.8 | -103.0 | 1195 | 7.62 | 0.25 | 644.3 | 20.49 | 0.01 |
| | U | T-241 HEATER | 0.3 | -811.5 | 742.9 | 1195 | 12.19 | 0.76 | 644.3 | 8.59 | 0.04 |
| | V | DHT2 HEATER (NEW) | 33.4 | 273.8 | -13.2 | 1195 | 30.48 | 1.07 | 714.0 | 11.35 | 4.21 |
| | W | SRU2 INCINERATOR (NEW) | 12.0 | 38.5 | -43.0 | 1195 | 38.10 | 0.76 | 922.0 | 18.94 | 1.51 |
| | | TOTAL | 901.5 | | | | | | | | |

NOTES -

1. THE PREFRACTIONATOR REBOILER HAS TWO STACKS, SOURCES E & F.
2. SOURCE H, THE CRUDE HEATER, INCLUDES THE EMISSIONS FROM THE VACUUM HEATER (SOURCE H EMITS 208.5 LBS/HR).

Table 2
Source Characteristics for Penelec Warren Station
(from September 1992 TRC Report)

| | |
|--|------------|
| Generator Capacity | = 94 MW |
| Full Load Heat Rate (MMBtu/MWH) | = 12.66 |
| Emission Rate (Based on maximum allowable fuel sulfur content of 3.9 lb/MMBtu) | = 583 g/s |
| Stack Temperature | = 498 K |
| Stack Exit Velocity | = 16.0 m/s |
| East Coordinate (m)* | = -5270. |
| North Coordinate (m)* | = 780. |
| Source Base Elevation (ft MSL) | = 1186 |
| Stack Height | = 61.0 m |
| Stack Diameter | = 4.7 m |

*Coordinates relative to the URC Boilerhouse stack

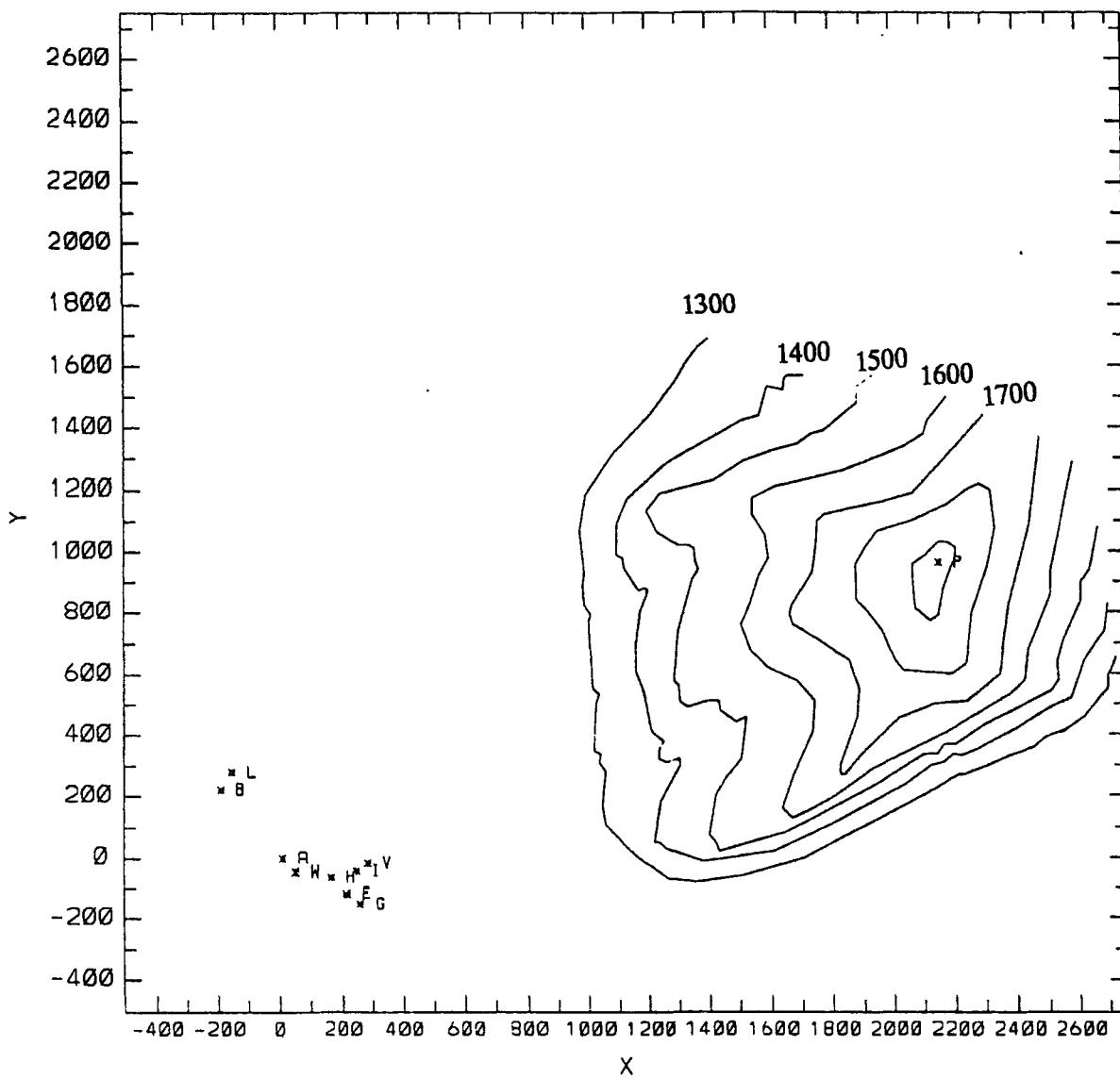


Figure 1. Digitized terrain contours for the hill to the east of the refinery. The contour interval is 100 feet and the peak elevation of the hill (P) is 1916 feet. The other letters denote the refinery sources with emission rates above 2.2 lbs. per hour. Distances along the axes are in meters.

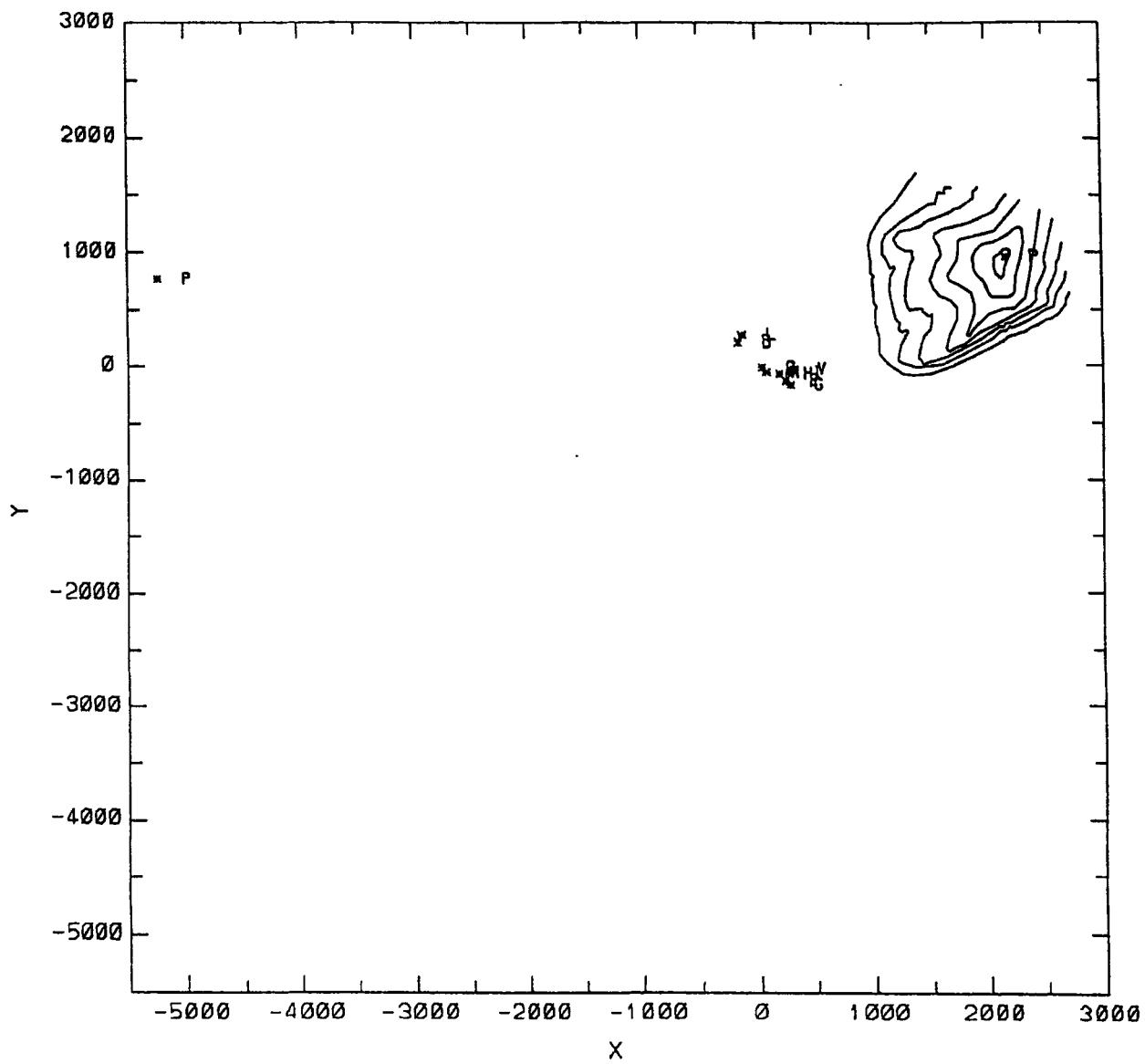


Figure 2. Penelec Warren Station (P) shown in relationship to the hill and the major refinery sources. Distances along the axes are in meters.

Table 3

**Flow Vectors from Major Sources to Hill
(Wind Direction is Flow Vector Plus 180°)**

| <u>Source</u> | <u>North Side of Hill</u> | <u>Hill Peak</u> | <u>South Side of Hill</u> |
|---------------|---------------------------|------------------|---------------------------|
| A | 40° | 66° | 93° |
| B | 47° | 72° | 101° |
| E | 31° | 61° | 88° |
| F | 31° | 61° | 88° |
| G | 29° | 60° | 87° |
| H | 34° | 63° | 91° |
| I | 32° | 63° | 93° |
| L | 48° | 73° | 104° |
| V | 30° | 63° | 94° |
| W | 37° | 64° | 91° |
| Penelec | | 89° | 98° |

Table 4
 CTSCREEN RECEPTORS
 (coordinates relative to boilerhouse stack)

| REC NO. | EAST (meters) | NORTH | ELEVATION ABOVE MSL (feet) |
|------------|------------------|---------|----------------------------------|
| 1 | 2720.00 | 650.00 | 1300.0 |
| 2 | 2696.29 | 558.91 | 1300.0 |
| 3 | 2637.36 | 481.19 | 1300.0 |
| 4 | 2560.73 | 417.77 | 1300.0 |
| 5 | 2471.55 | 376.29 | 1300.0 |
| 6 | 2382.54 | 332.94 | 1300.0 |
| 7 | 2290.28 | 294.49 | 1300.0 |
| 8 | 2196.52 | 263.44 | 1300.0 |
| 9 | 2110.37 | 212.71 | 1300.0 |
| 10 | 2023.29 | 163.55 | 1300.0 |
| 11 | 1934.59 | 117.38 | 1300.0 |
| 12 | 1845.77 | 71.43 | 1300.0 |
| 13 | 1756.35 | 26.67 | 1300.0 |
| 14 | 1664.47 | -11.98 | 1300.0 |
| 15 | 1568.97 | -41.67 | 1300.0 |
| 16 | 1472.10 | -65.09 | 1300.0 |
| 17 | 1372.99 | -78.39 | 1300.0 |
| 18 | 1273.58 | -70.80 | 1300.0 |
| 19 | 1190.32 | -17.02 | 1300.0 |
| 20 | 1113.70 | 46.58 | 1300.0 |
| 21 | 1056.33 | 126.03 | 1300.0 |
| 22 | 1052.52 | 225.32 | 1300.0 |
| 23 | 1039.20 | 319.44 | 1300.0 |
| 24 | 1023.37 | 405.63 | 1300.0 |
| 25 | 1026.09 | 505.22 | 1300.0 |
| 26 | 1015.68 | 596.35 | 1300.0 |
| 27 | 1010.69 | 696.23 | 1300.0 |
| 28 | 1007.71 | 794.70 | 1300.0 |
| 29 | 984.10 | 888.86 | 1300.0 |
| 30 | 981.57 | 988.50 | 1300.0 |
| 31 | 977.71 | 1087.76 | 1300.0 |
| 32 | 1000.09 | 1184.87 | 1300.0 |
| 33 | 1053.74 | 1269.26 | 1300.0 |
| 34 | 1113.71 | 1348.67 | 1300.0 |
| 35 | 1183.21 | 1420.57 | 1300.0 |
| 36 | 1248.21 | 1496.48 | 1300.0 |
| 37 | 1307.21 | 1576.84 | 1300.0 |
| 38 | 2697.00 | 830.00 | 1400.0 |

Table 4
 CTSCREEN RECEPTORS (Continued)
 (coordinates relative to boilerhouse stack)

| REC NO. | EAST (meters) | NORTH | ELEVATION ABOVE MSL (feet) |
|------------|------------------|---------|----------------------------------|
| 39 | 2679.72 | 732.46 | 1400.0 |
| 40 | 2622.38 | 650.54 | 1400.0 |
| 41 | 2588.69 | 556.93 | 1400.0 |
| 42 | 2520.95 | 495.27 | 1400.0 |
| 43 | 2434.91 | 444.51 | 1400.0 |
| 44 | 2348.14 | 394.89 | 1400.0 |
| 45 | 2259.43 | 348.78 | 1400.0 |
| 46 | 2173.87 | 319.26 | 1400.0 |
| 47 | 2086.63 | 275.03 | 1400.0 |
| 48 | 2002.37 | 221.53 | 1400.0 |
| 49 | 1914.13 | 174.47 | 1400.0 |
| 50 | 1825.90 | 127.41 | 1400.0 |
| 51 | 1736.42 | 82.77 | 1400.0 |
| 52 | 1646.72 | 38.58 | 1400.0 |
| 53 | 1551.53 | 12.54 | 1400.0 |
| 54 | 1452.36 | -.34 | 1400.0 |
| 55 | 1354.23 | -2.21 | 1400.0 |
| 56 | 1259.21 | 28.95 | 1400.0 |
| 57 | 1226.53 | 100.43 | 1400.0 |
| 58 | 1249.51 | 196.79 | 1400.0 |
| 59 | 1298.81 | 283.79 | 1400.0 |
| 60 | 1247.75 | 315.30 | 1400.0 |
| 61 | 1233.18 | 392.15 | 1400.0 |
| 62 | 1194.10 | 477.08 | 1400.0 |
| 63 | 1170.35 | 573.99 | 1400.0 |
| 64 | 1156.20 | 671.89 | 1400.0 |
| 65 | 1166.91 | 771.31 | 1400.0 |
| 66 | 1197.23 | 865.73 | 1400.0 |
| 67 | 1134.85 | 916.88 | 1400.0 |
| 68 | 1095.56 | 1001.05 | 1400.0 |
| 69 | 1096.51 | 1100.02 | 1400.0 |
| 70 | 1145.75 | 1185.02 | 1400.0 |
| 71 | 1222.09 | 1249.62 | 1400.0 |
| 72 | 1304.11 | 1306.05 | 1400.0 |
| 73 | 1391.18 | 1355.24 | 1400.0 |
| 74 | 1478.12 | 1404.64 | 1400.0 |
| 75 | 1564.40 | 1448.30 | 1400.0 |
| 76 | 1602.71 | 1527.28 | 1400.0 |
| 77 | 2663.00 | 1080.00 | 1500.0 |
| 78 | 2644.06 | 981.81 | 1500.0 |

Table 4
 CTSCREEN RECEPTORS (Continued)
 (coordinates relative to boilerhouse stack)

| REC NO. | EAST (meters) | NORTH | ELEVATION ABOVE MSL (feet) |
|------------|------------------|---------|----------------------------------|
| 79 | 2604.21 | 893.81 | 1500.0 |
| 80 | 2588.25 | 797.39 | 1500.0 |
| 81 | 2550.33 | 704.87 | 1500.0 |
| 82 | 2530.56 | 609.62 | 1500.0 |
| 83 | 2489.07 | 529.90 | 1500.0 |
| 84 | 2399.88 | 484.68 | 1500.0 |
| 85 | 2310.68 | 439.47 | 1500.0 |
| 86 | 2226.00 | 386.48 | 1500.0 |
| 87 | 2143.35 | 344.19 | 1500.0 |
| 88 | 2054.00 | 310.51 | 1500.0 |
| 89 | 1969.81 | 256.55 | 1500.0 |
| 90 | 1883.05 | 206.94 | 1500.0 |
| 91 | 1795.15 | 159.27 | 1500.0 |
| 92 | 1707.24 | 111.59 | 1500.0 |
| 93 | 1616.47 | 71.05 | 1500.0 |
| 94 | 1520.05 | 44.51 | 1500.0 |
| 95 | 1428.59 | 27.24 | 1500.0 |
| 96 | 1409.72 | 117.81 | 1500.0 |
| 97 | 1430.28 | 215.07 | 1500.0 |
| 98 | 1484.81 | 297.86 | 1500.0 |
| 99 | 1515.20 | 389.78 | 1500.0 |
| 100 | 1497.52 | 445.44 | 1500.0 |
| 101 | 1434.79 | 506.04 | 1500.0 |
| 102 | 1340.91 | 492.30 | 1500.0 |
| 103 | 1294.98 | 568.25 | 1500.0 |
| 104 | 1293.94 | 664.11 | 1500.0 |
| 105 | 1308.19 | 762.86 | 1500.0 |
| 106 | 1334.31 | 859.39 | 1500.0 |
| 107 | 1367.91 | 949.27 | 1500.0 |
| 108 | 1318.24 | 1020.00 | 1500.0 |
| 109 | 1228.11 | 1059.94 | 1500.0 |
| 110 | 1207.60 | 1147.37 | 1500.0 |
| 111 | 1285.95 | 1198.99 | 1500.0 |
| 112 | 1383.49 | 1220.89 | 1500.0 |
| 113 | 1472.05 | 1264.60 | 1500.0 |
| 114 | 1560.74 | 1309.70 | 1500.0 |
| 115 | 1655.43 | 1341.28 | 1500.0 |
| 116 | 1743.88 | 1383.63 | 1500.0 |
| 117 | 1827.19 | 1435.55 | 1500.0 |
| 118 | 2580.00 | 1290.00 | 1600.0 |

Table 4
 CTSCREEN RECEPTORS (Continued)
 (coordinates relative to boilerhouse stack)

| REC NO. | EAST (meters) | NORTH | ELEVATION ABOVE MSL (feet) |
|------------|------------------|---------|----------------------------------|
| 119 | 2560.13 | 1191.99 | 1600.0 |
| 120 | 2540.25 | 1093.99 | 1600.0 |
| 121 | 2520.38 | 995.98 | 1600.0 |
| 122 | 2507.47 | 897.33 | 1600.0 |
| 123 | 2485.26 | 801.61 | 1600.0 |
| 124 | 2448.97 | 708.42 | 1600.0 |
| 125 | 2428.80 | 611.47 | 1600.0 |
| 126 | 2379.15 | 530.16 | 1600.0 |
| 127 | 2293.21 | 479.04 | 1600.0 |
| 128 | 2207.24 | 427.96 | 1600.0 |
| 129 | 2118.78 | 381.48 | 1600.0 |
| 130 | 2028.97 | 337.50 | 1600.0 |
| 131 | 1939.16 | 293.51 | 1600.0 |
| 132 | 1857.95 | 235.37 | 1600.0 |
| 133 | 1774.23 | 181.18 | 1600.0 |
| 134 | 1684.79 | 136.57 | 1600.0 |
| 135 | 1647.89 | 195.45 | 1600.0 |
| 136 | 1683.03 | 289.05 | 1600.0 |
| 137 | 1721.86 | 381.20 | 1600.0 |
| 138 | 1737.43 | 478.66 | 1600.0 |
| 139 | 1695.22 | 562.84 | 1600.0 |
| 140 | 1609.73 | 610.99 | 1600.0 |
| 141 | 1534.52 | 674.29 | 1600.0 |
| 142 | 1508.56 | 768.64 | 1600.0 |
| 143 | 1545.29 | 861.61 | 1600.0 |
| 144 | 1582.61 | 954.09 | 1600.0 |
| 145 | 1582.11 | 1049.46 | 1600.0 |
| 146 | 1543.60 | 1139.80 | 1600.0 |
| 147 | 1604.40 | 1203.19 | 1600.0 |
| 148 | 1700.45 | 1229.41 | 1600.0 |
| 149 | 1797.85 | 1252.06 | 1600.0 |
| 150 | 1892.21 | 1284.33 | 1600.0 |
| 151 | 1984.93 | 1321.79 | 1600.0 |
| 152 | 2074.29 | 1366.05 | 1600.0 |
| 153 | 2473.00 | 1370.00 | 1700.0 |
| 154 | 2460.25 | 1270.82 | 1700.0 |
| 155 | 2447.50 | 1171.63 | 1700.0 |
| 156 | 2432.92 | 1072.78 | 1700.0 |
| 157 | 2409.85 | 975.48 | 1700.0 |

Table 4
 CTSCREEN RECEPTORS (Continued)
 (coordinates relative to boilerhouse stack)

| REC NO. | EAST | NORTH | ELEVATION ABOVE MSL |
|------------|----------|---------|------------------------|
| | (meters) | | (feet) |
| 158 | 2386.79 | 878.17 | 1700.0 |
| 159 | 2367.74 | 780.13 | 1700.0 |
| 160 | 2354.68 | 680.99 | 1700.0 |
| 161 | 2330.10 | 588.08 | 1700.0 |
| 162 | 2254.17 | 523.00 | 1700.0 |
| 163 | 2159.32 | 502.62 | 1700.0 |
| 164 | 2065.29 | 471.68 | 1700.0 |
| 165 | 1982.75 | 418.28 | 1700.0 |
| 166 | 1911.46 | 348.15 | 1700.0 |
| 167 | 1845.00 | 273.53 | 1700.0 |
| 168 | 1842.23 | 345.55 | 1700.0 |
| 169 | 1875.78 | 439.75 | 1700.0 |
| 170 | 1883.87 | 538.49 | 1700.0 |
| 171 | 1856.86 | 634.23 | 1700.0 |
| 172 | 1777.79 | 693.51 | 1700.0 |
| 173 | 1693.75 | 747.66 | 1700.0 |
| 174 | 1675.32 | 830.53 | 1700.0 |
| 175 | 1726.77 | 916.28 | 1700.0 |
| 176 | 1747.01 | 1013.14 | 1700.0 |
| 177 | 1760.42 | 1108.97 | 1700.0 |
| 178 | 1854.29 | 1136.91 | 1700.0 |
| 179 | 1952.16 | 1157.43 | 1700.0 |
| 180 | 2048.04 | 1185.73 | 1700.0 |
| 181 | 2119.56 | 1253.08 | 1700.0 |
| 182 | 2186.97 | 1326.95 | 1700.0 |
| 183 | 2314.00 | 1200.00 | 1800.0 |
| 184 | 2327.22 | 1100.88 | 1800.0 |
| 185 | 2313.38 | 1002.83 | 1800.0 |
| 186 | 2289.34 | 905.82 | 1800.0 |
| 187 | 2261.78 | 809.69 | 1800.0 |
| 188 | 2248.79 | 710.67 | 1800.0 |
| 189 | 2219.29 | 620.19 | 1800.0 |
| 190 | 2125.53 | 604.09 | 1800.0 |
| 191 | 2028.25 | 615.95 | 1800.0 |
| 192 | 1979.75 | 701.58 | 1800.0 |
| 193 | 1929.42 | 787.15 | 1800.0 |
| 194 | 1880.06 | 868.19 | 1800.0 |
| 195 | 1880.98 | 967.10 | 1800.0 |
| 196 | 1935.93 | 1050.34 | 1800.0 |
| 197 | 2023.53 | 1089.96 | 1800.0 |

Table 4
CTSCREEN RECEPTORS (Concluded)
(coordinates relative to boilerhouse stack)

| | | | |
|-----|---------|---------|--------|
| 198 | 2116.86 | 1125.16 | 1800.0 |
| 199 | 2203.60 | 1173.54 | 1800.0 |
| 200 | 2066.00 | 960.00 | 1900.0 |
| 201 | 2140.88 | 1025.67 | 1900.0 |
| 202 | 2199.47 | 982.83 | 1900.0 |
| 203 | 2166.91 | 888.32 | 1900.0 |
| 204 | 2145.17 | 790.78 | 1900.0 |
| 205 | 2075.24 | 817.63 | 1900.0 |

measured SO₂ concentrations from the monitor(s) outside of the 90 degree sector centered on the downwind direction from the major refinery sources and from Penelec.

However, for winds direction affecting the modeled hill, 210° - 285°, neither the North nor South monitors were outside the 90° sector of upwind source influence. In these cases, the lesser of the minimum monitored concentration within the 90° downwind sector or the previous hourly background concentration was designated as the background concentration. Table 4-3 of the November report, reproduced as Table 5, gave the average background concentrations for each wind direction sector. The average hourly background value for the wind directions blowing from the refinery to the hill is about 20 µg/m³. This value was used for both the 3- and 24-hour background concentration.

3. Modeling Results

The CTSCREEN results for the initial 205 receptor grid are shown in Table 6. These concentrations do not include background, but are well below ambient air quality standards. For the stable/neutral flow case, the highest, second-high (HSH) predicted concentrations are 828 µg/m³ for the 3-hour average and 177 µg/m³ for the 24-hour standard. The maximum annual concentration is 35 µg/m³. For the unstable flow case the HSH 3-hour average is 933 µg/m³, the HSH 24-hour average is 200 µg/m³ and the annual maximum is 40 µg/m³. The applicable air quality standards are 1300 µg/m³ for the HSH 3-hour average, 365 µg/m³ for the HSH 24-hour average and 80 µg/m³ for the annual average.

Two dense, local, "hot-spot" grids were constructed, centered on locations of the maximum predicted concentration for the stable/neutral flow and unstable flow cases. The dense grids were squares, 200 meters on a side, with receptors located every 25 m in both the north-south and east-west directions. The parameters for the local grids are shown in Table 7. The range of wind directions were selected by bounding the directions from the major sources to the initial receptor with the peak concentration and extending at least 5° from the wind direction associated with the maximum concentration. Wind directions every 1° were modeled within the wind direction range.

Table 8 presents the results of the CTSCREEN model at the "hot-spot" grids. The maximum HSH 3 and 24-hour averaged concentrations and the maximum annual concentration are well below the ambient air quality standards. The maximum predicted 3-hour concentrations are more than 300 µg/m³ below applicable limits and the 24-hour concentration is more than 100 µg/m³ below the 365 µg/m³ standard. Even with background concentrations of the same magnitude as in the November 1992 report, there would be no predicted violations.

Table 5
Hourly Average Calculated Background Concentration by Wind Direction
Sector Using EPA-Recommended Procedures

| Sector (°) | Average Background Concentration ($\mu\text{g}/\text{m}^3$) |
|---------------|--|
| 337.5 - 22.5 | 21.1 |
| 22.5 - 67.5 | 17.2 |
| 67.5 - 112.5 | 9.8 |
| 112.5 - 157.7 | 13.9 |
| 157.5 - 202.5 | 10.0 |
| 202.5 - 247.5 | 11.7 |
| 247.5 - 292.5 | 19.8 |
| 292.5 - 337.5 | 27.9 |

Table 6
Maximum SO₂ Concentrations Predicted by CTSCREEN with Initial Receptor Grid

| Stability Class | Scaled Concentrations | | | | | | | | Receptor Number | |
|-----------------|--|-----|-------------|--------------|--------|---------------------|--------------------------|----------------------|-----------------|--|
| | One-Hour Average | | HSH 3-hr | HSH 24-hr | Annual | Elevation (feet) | Wind Direction (°) | Wind Speed (m) | | |
| | Maximum Concentration ($\mu\text{g}/\text{m}^3$) | | | | | | | | | |
| Stable/Neutral | 1182 | 828 | 177 | 35 | 1600 | 275 | 4.0 | 134 | | |
| Unstable | 1333 | 933 | 200 | 40 | 1300 | 275 | 1.0 | 16 | | |

CTSCREEN Scaling Factors:

| | |
|---|------|
| 1-hour to highest, second-highest 3-hour | 0.70 |
| 1-hour to highest, second-highest 24-hour | 0.15 |
| 1-hour to annual | 0.03 |

Table 7
Parameters for Dense Receptor (Hot-Spot) CTSCREEN Runs

| Stability Class | Receptor Grid Resolution (m) | Number of Receptors | Range of Wind Directions Simulated (1° Increment) |
|-----------------|------------------------------|---------------------|---|
| Stable/Neutral | 25 | 81 | 259-280 |
| Unstable | 25 | 63 | 267-284 |

Table 8
Maximum SO₂ Concentrations Predicted by CTSCREEN with Dense Local Receptor Grids
Includes Refinery, Penelec and Background Concentrations

| Stability Class | Total Scaled Concentrations* | | | Receptor | | |
|-----------------|------------------------------|-------------|--------|----------|--------|---------------|
| | HSH 3-Hour | HSH 24-Hour | Annual | x(m) | y(m) | Elevation(ft) |
| Stable/Neutral | 921 | 213 | 57 | 1584.8 | 36.6 | 1540. |
| Unstable | 981 | 226 | 59 | 1522.1 | -115.1 | 1240. |

Background Concentration ($\mu\text{g}/\text{m}^3$) of 20 $\mu\text{g}/\text{m}^3$ for 3 and 24 hr averaging time; 18 $\mu\text{g}/\text{m}^3$ for annual